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ABSTRACT

This is the first of a series of three volumes containing papers from a bilingual symposium held in 1975. Presentations and discussion at the symposium dealt primarily with suggestions for research which linguists should undertake to assist bilingual programs. This volume contains the following papers: "Developmental Psycholinguistics," by Deborah Keller-Cohen; "Wilder Penfield's Views on Bilingual Education," by William Orr Dingwall; and "Special Problems in Language Development: The Language Impaired Child and Bilingual Education," by Bruce Fraser. Keller-Cohen's paper is followed by a discussion by Bernard Spolsky. (CLK)

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Final Report of the Bilingual Symposium:

Building a Research Agenda

Volume I

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Center for Applied Linguistics
1611 North Kent St.
Arlington, Virginia 22209

50th Annual Meeting of the Linguistic Society of America

December 27-28, 1975 Hyatt Regency San Francisco, California

A BILINGUAL SYMPOSIUM: BUILDING A RESEARCH AGENDA

Sponsor: National Institute of Education • Coordinator: Center for Applied Linguistics

A Bilingual Symposium: Building a Research Agenda

December 27-28, 1975 — 50th LSA Annual Meeting — Hyatt Regency San Francisco, California

A Bilingual Symposium: Building a Research Agenda, sponsored by the National Institute of Education, has been designed to promote exchange between professional linguists and educators.

Symposium sessions will treat linguistic research which can be applied immediately to the challenging needs of bilingual education programs. At the same time, a forum will be provided for linguists and practitioners to work together to develop priorities for future research in linguistics. Through such dialogue, linguistic research can be made more responsive to bilingual education planning and practice.

The Symposium, coordinated by the Center for Applied Linguistics, will be held in cooperation with the 50th Annual Meeting of the Linguistic Society of America. Participants will include prominent research linguists, noted practitioners of bilingual education, and representatives of private foundations.

Topics to be covered include language acquisition and proficiency assessment, language structure, meaning, and social variables of language use. Brief presentations of research in these areas will be made, followed by discussion of their relevance to bilingual education needs.

A complete program and an LSA meeting registration form are included below. Additional information about the Bilingual Symposium is available from Roger W. Shuy, Symposium Director, CAL, 1611 North Kent Street, Arlington, Virginia 22209 (703) 528-4312. **THE LSA PREREGISTRATION FORM SHOULD BE RETURNED TO THE LSA SECRETARIAT AT THE SAME ADDRESS.**

December 27, 1975
Session I

Chair: *Roger W. Shuy*, CAL & Georgetown U

1:00 p.m. **Opening Remarks**
Rudolph C. Troike, CAL
Sarita Schotta, NIE

1:45 p.m. **Issues in First Language Acquisition**
"Synthesis of Research in Language Acquisition," *Deborah Keller-Cohen*, U Michigan. Discussants: *Theresa Chen*, San Francisco State U and *Bernard Spolsky*, U New Mexico

2:45 p.m. **Issues in Language Learning**
"Synthesis of Research in Developmental Psycholinguistics and Language Proficiency Assessment," *Bruce Fraser*, Boston U. Discussants: *George Blanco*, U Texas-Austin and *Ricardo Cornejo*, UCLA

3:45 p.m. Break

4:15 p.m. **Language, the Brain, and Linguistic Ability**
"Synthesis of Research in Neurolinguistics," *Harry Whitaker*, U Rochester. Discussants: *William Dingwall*, U Maryland; additions forthcoming

5:15 p.m. **Summation**
Roger W. Shuy, CAL & Georgetown U

December 28, 1975
Session II

Chair: *Dell Hymes*, U Pennsylvania

9:00 a.m. **Language Structure**
"Synthesis of Research in Syntax," *Arnold Zwicky*, Ohio State U. Discussants: *Gustavo Gonzalez*, U California-Santa Barbara and *Rosaura Sanchez*, UCLA

10:00 a.m. Break

10:30 a.m. **Meaning**
"Synthesis of Research in Semantics," *John Lawler*, U Michigan. Discussants: To Be Announced

11:30 a.m. **Language Functions**
"Synthesis of Research in Pragmatics," *Charles Pyle*, U Michigan. Discussants: *Lily Wong Fillmore*, U California-Berkeley and *Richard Cerbatos*, San Francisco Unified School District Lawyer

12:30 p.m. **Summation**
Dell Hymes, U Pennsylvania

December 28, 1975
Session III

Chair: *Rudolph C. Troike*, CAL

2:00 p.m. **Language and Society**
"Synthesis of Research in Sociolinguistics," *Ralph Fasold*, Georgetown U. Discussants: *William Milan*, Teachers College, Columbia U and *Mark Lohman*, NIE

3:00 p.m. **Break**

3:30 p.m. **Language in Use**
"Synthesis of Research in Ethnography of Communication," *Joel Sherzer*, U Texas-Austin. Discussants: *Lucia Elias-Olivares*, Pan American U and *Marjorie Martus*, Ford Foundation

4:30 p.m. **An International View of Bilingual Education**
Glyn Lewis, Wales, United Kingdom

5:10 p.m. **Summation**
Rudolph C. Troike, CAL

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Introduction

To assist NIE in building an agenda for bilingual education research, CAL chose to bring together those people who know what linguistics has to say and those people who know what is needed in the field of bilingual education.

The available knowledge bases in language acquisition, syntax, semantics, pragmatics, sociolinguistics and other sub-fields of linguistics were presented for the review of educators and bilingual education program planners. Presentation and discussion was addressed to three issues:

- what linguistic knowledge is available now that can and should be applied to bilingual program planning and implementation?
- how can this application be accomplished?
- what research should linguists undertake to fill gaps in existing knowledge bases and to advance and improve bilingual programs? Inherent in this issue is the prioritization of research efforts.

The papers that follow present the views of 9 linguists, specialists in varied sub-fields of linguistic science, summarizing in non-technical fashion, the potential contribution of their sub-field to bilingual education concerns. They also describe areas of research where their field is prepared to undertake to further the improvement of bilingual programs. Discussants' papers acknowledge the utility of some of the linguists suggestions and provide some foci for necessary research.

A final section, prepared by CAL staff, is a preliminary effort in devising an agenda for research by linguists for bilingual educators. One general concern, which should be kept in mind in reading the Symposium papers and the CAL research agenda suggestions, is that the linguistic research have a realistic base, that it be grounded in real-world concerns in such a way that the end products display reasonable and important implications for education.

It is recommended, then, that proposals for research be evaluated especially in terms of their recognition of this need for basis in the real problems of bilingual education programs and their potential for applicational extensions.

Further, it will be noted that Symposium participants encouraged more interactions of the sort this conference allowed. Educators particularly felt there was need for more interpretation of the knowledge bases of Linguistic sub-fields to allow more specific discussion of how the application of knowledge in classrooms and in planning could be accomplished.

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DEVELOPMENTAL PSYCHOLINGUISTICS

Deborah Keller-Cohen
University of Michigan

Invited paper prepared for the
Bilingual Symposium: Building
a Linguistic Research Agenda in
Bilingual Education.

Linguistic Society of America,
San Francisco, December 1975.

Introduction

This conference explores current trends in certain sub-fields of linguistics that may have relevance for bilingual education. My task has been to examine research in children's language acquisition that may be pertinent in teaching the non-native child. Insofar as developmental psycholinguistics has been growing at a remarkable rate during the last two decades, this review is necessarily limited to certain areas of current research. Three areas in particular have been examined: pragmatics, semantics (the lexicon in particular) and child second language acquisition. I have devoted considerable attention to research in pragmatics since it seemed to me that the purposes for which a child uses language and the rules governing the use are in some sense more relevant to questions of acquiring competence in a second language than some other questions. This is not to say that we ought not to be concerned with the bilingual child's use of phonology and syntax, for example. However, I suggest that research on conversational competence may provide particularly relevant insights into language use that will assist educators in their teaching of bilingual children.

Discussions of phonology and syntax have been omitted. Phonology was excluded for some of the same reasons that it is also not a topic in this symposium: much of the previous research in linguistics relevant to second language learning was devoted to the study of phonology. The acquisition of

syntax was likewise not reviewed. It seemed to me that there were ample sources dealing with this area (See Berko and Brown, 1960; Ervin and Miller, 1963; Ervin-Tripp, 1966). Studies of the acquisition of morphology have had significant impact on research in child second language learning in that a large majority of investigations in this latter area have dealt with morphology. The subject has been treated in this review in the section on child non-native language acquisition.

Research on the language spoken to children or input has focused primarily on describing input(Drach, 1969; Snow, 1972; Broen, 1972) with somewhat less attention paid to accounting for the form of input in terms of communicative constraints (Gelman and Shatz, 1975) or information processing factors (Newport, 1975). There is little research on the effects of the known parameters of input on the child's language development.This is regrettable since it should be of considerable interest in teacher training in bilingual education. Both input and variability have primarily been treated only in reference to certain issues in child second language acquisition.

The controversy over the semantic versus the syntactic interpretation of multi-word utterances was not examined here. Since the non-native child has knowledge of syntax, albeit incomplete, from his first language, his knowledge about language as reflected in multi-word combinations in the second language raise issues different from those in first language acquisition.

I apologize to those whose work has been omitted because of time, space, lack of insight or ignorance. Despite these infelicities, it is hoped that the reader will find this review suggestive of current and future research in certain areas of children's language acquisition.

Pragmatics

The view that language is social behavior is hardly new. Nevertheless, this position did not receive wide recognition in the study of language acquisition until recently (Ervin-Tripp, in press; Bates, 1976a, 1976b; Garvey and Hogan, 1973; Garvey, 1975; Lewis and Cherry, 1975). Concern was instead with the form (Bellugi and Brown, 1964; Brown, Cazden and Bellugi, 1969) and meaning of children's utterances (Bowerman, 1973a, 1973b; Clark, 1973b).

The social approach to the study of child language grew partly out the awareness that contextual information was critical in analyses of children's utterances. Bloom's work (1970, 1973) was instrumental in demonstrating the importance of contextual cues in decoding children's early utterances. One difference between Bloom's earlier approach (in contrast see her later work, Bloom, Rocissano, and Hood, Note 4) and more recent work is the notion 'context': Bloom examined the immediate behavioral context of an utterance to assign meaning to utterances as structural units; recent investigations have looked not only at the immediate or concurrent behavior but also at the broader, social context in which an utterance is produced (Bates, 1976a, 1976b; Dore, in press; Garvey, 1975, in press; Keenan, 1974b). That is, they have considered the ways in which speakers use language to convey social needs like promising, requesting, questioning and so forth. This domain of research is a part of the study of discourse relations and "the rules for constructing conversations" (Dore, 1976).

Much of the current research on the acquisition of pragmatics has been devoted to pre-verbal communication (Bates, et al. Note 3; Bruner, 1975; Sugarman, in press). Bates (1976b) has argued convincingly that from rather early in the first year of life children's communication is primarily pragmatic. Citing longitudinal data from a variety of sources, she found that many single word utterances expressed the pragmatic functions of requesting action, for example (Greenfield and Smith, in press; Bates, Camaioni and Volterra, 1975). Likewise Dore (1975) reports that his two subjects systematically used one word utterances to express pragmatic functions like requesting, answering, protesting, and greeting. (See also Antinucci and Parisi, 1973; Gruber, 1973). The research examined in this section however, concerns children beyond the single word stage since it was felt that this literature might be more relevant in concerns in bilingual education.

Most research into the pragmatics of children's language has concentrated on children's communicative intention. Before discussing this literature, it is necessary to consider some of the broader processes in children's dialogue. The following section is first concerned with statements that can be made about the structure of children's discourse in general. An assumption behind this discussion is that children are attentive and responsive conversationalists. Cohesiveness in their discourse is partial evidence for this claim. Those strategies and processes that operate across the broad domain of the speaker's intentions will also be considered. For example, we are interested in communicative skills employed in conversation no matter what the speaker's intentions. This is not to say that processes like repetition may not be important for the communication of particular intentions. Neither is it claimed that all processes and strategies are equally important at every stage in the child's acquistion of conversationsal skills. Rather, it is argued that

the child employs a variety of strategies in the communication of numerous communicative intentions.

Cohesion

Halliday and Hasan (1973) proposed a model of the functional-semantic components of language. The component most relevant to our discussion is the textual component, the means a language has for creating both internal coherency and external coherency. Internal coherency (my terminology) consists of ways of tying together subsequent and prior discourse. External coherency (my terminology) ties a text (a piece of discourse) to the context (psychological, social, etc.) within which the utterance is produced.

One dimension of text unification (coherency) is the arrangement of information in the text. Halliday and Hasan refer to this organization as the information structure. The information structure orders information into the given and new. (See Halliday, 1967, 1970; Clark and Haviland, 1974; Firbas, 1964; and Sinha, for discussions of old (given) and new information). In the following discussion the information structure is referred to as functional cohesion.

Halliday and Hasan's terms, cohesion processes in language used to relate one element or part of a text with another. For the purposes of this review, cohesion shall be termed formal cohesion. Included are processes like ellipsis, anaphora, and conjunction. In anaphora for example, one utterance refers back to another through the use of pronominalization as in (1).

(1) A. We saw the circus yesterday.

B. I saw it too.

The notion 'cohesion' is complex and deserves far more attention than space permits. Suffice it to say that we are interested in whether children's interactions 'hang together', that is, whether children have learned how to structure their utterances so that what they say to another person relates formally and functionally to what that person has already said.

For many years, investigators maintained the Piagetian position (1971) that young children do not engage in cooperative conversation. It was argued that the child's egocentricity prevented him from adapting his speech to communicate with a listener. This suggested that a child's utterance would more likely than not be unrelated to or not cohere with the utterance of a listener.

This position has been challenged recently. In examining the verbal interactions of 18 dyads of children between 3½ and 5 years, Garvey and Hogan (1973) found that the children spent a substantial amount of time engaged in social speech and social interaction. This finding is supported by Keenan (1974b) among others. Since children apparently do engage in cooperative conversation, it seems appropriate to consider how this cooperation is maintained. One way of looking at cooperation is in terms of cohesiveness. Cohesiveness is an important notion in the following discussion since it presents a framework in which to consider in what ways children's utterances in dialogue are related. Both adult-child and child-child interactions are considered in order to provide the broadest base from which generalizations can be made.

There are many ways in which successive utterances can be thought of as being cohesive or related to each other. One of the most basic links between two speaker's utterances is phonological similarity. Keenan (1974a, in press) found similarity in sound sequences to be a common means of typing together sequential utterances in children's speech. The following example

is taken from her data (in press).

(2) A. [apʃi:] [autʃi:] (2x) [o:tʃi:] [o:ʃabatʃ]

B. [ʃa:] [ʃabatʃ]

A. [ʃo:babat]

B. [ʃo:babat] [ʃobabatʃ] (laughs)

(This sequence continues for quite a while).

Keenan also observed that while maintaining cohesion through phonological similarity is generally uncommon in adult conversation, it does turn up on occasions where one speaker makes light of another's worries.

(3) A. I really have to do some work.

B. Work, shmork. Let's go to the movies.

In the same investigation, Keenan also reported sequences of interaction that contained both referentially interpretable utterances and sound play. It may be that phonological cohesion is an important source of discourse continuity in the early stages of language development when more sophisticated means of relating utterances have not yet been acquired. Further longitudinal study might be addressed to this question.

Functional Cohesion

Another way in which a discourse maintains continuity is through shared topics. One speaker's utterance can be related to another's by talking about the same thing. This is achieved in a number of ways. One way of sharing topics is through the juxtaposition of new and old information. While new and old information are in many ways related to proposition and presupposition, this relationship will not be considered here. From one perspective, old information is that which is given, that which is understood without saying or with out being repeated; new information is novel data that relates in some way to the old information.

There is evidence that children attend to new rather than old information not long after birth. Bates (1976a) argues that children's orienting systems are such that attention is focused on new rather than old stimuli within several days from birth. Attention to what is novel about an object, event or situation appears to be important from early sensory-motor development through language development. Greenfield and Smith (in press) found that children's single word utterances tended to encode new information, aspects of the environment undergoing change, rather than old information.

MacWhinney(1975b) examined the longitudinal data from two Hungarian children from 1½ to 2½ year of age for evidence of the use of focusing devices, i.e. the ways in which the children related new and old information within an utterance. He found that the children used stress, intonation, and shifts in word order to encode new information. In particular, he found that "important or interesting words" were both stressed and made to precede words expressing 'old' information. (See also MacWhinney, 1975a). A similar finding is reported with Italian children in Bates (1976a).

On the level of dialogue, the literature suggests that children gradually learn to relate their utterances to those of another by manipulating the given and new. Bloom, Rocissano and Hood (Note 4) examined adult-child discourse for evidence of contingency relationships between the child's utterances and that of the

adult. The children in their investigation participated in a longitudinal study from approximately 21 to 36 months of age. This period coincides with Brown's Stages 1 - 5. Bloom et al. looked at the children's speech at Stage 1 (MLU 1,75), Stage 2 (MLU 2.25) and Stage 5 (MLU 4.00). They found a developmental increase in the frequency with which the children's utterances shared the same topic as the adult's. There was also an increase in the number of child utterances that both shared the same topic with the adult's utterances and added new information.

In terms of the expression of old and new information within the children's contingent responses, Bloom et al. also report a shift in both what is expressed and how it is expressed as the children's language development progressed. The children's discourse evolved from non-expression of old information to a expression of old information through a variety of formal processes. In Stage 1 given (old) information was left unexpressed. New information was expressed by a lexical item or phrase. During these periods the new information was now expressed by a sentence. Another development in Stages 2 - 5 was that the given was frequently expressed by partial repetition; the new was frequently expressed through substitution or expansion. Lastly, in Stages 2 - 5 another means for expressing old information was through the use of both partial repetition and recoding. Substitution and expansion were again used to express new information.

That fact that at first the children do not express old information might be the result of at least two factors. With limited storage

space it seems optimal for the child to express what is new rather than what is not. In addition, since young children are not well aware of points of view other than their own, this might lead them to leave unexpressed what they believe is common or shared knowledge. The growth of expression of given information may than arise out of increased storage space and the development of the awareness of different points of view.

It is important to note that while there was an increase and change in linguistically contingent utterances in Bloom et al.'s study, the over-all percentage of those utterances was low, ranging from 13 percent in Stage 1 to 40 percent in Stage 5. Keenan and Schieffelin (1976) suggest a number of factors that may account for the low percentage of linguistically contingent responses in the preceding data. Attention is no doubt a significant factor. The child initially may not be attending to the same object or event as the adult, resulting in a non-contingent utterance from the child. Once conversation has begun, the child has a more limited attention span than the adult, contributing to a more rapid demise in the child's ability to sustain cohesiveness ('relevance' in Keenan and Schieffelin's terms). As previously indicated, children do attend to novel stimuli; this would contribute to their tendency to be distracted more easily than the adult. Another important source of non-contingency in the child's utterance is that he simply does not understand what the adult is saying or the nature of the topic being discussed

Formal Cohension

Repetition, the reproduction of all or part of a precedin- utterance is a productive cohesion-creating device in dialo-ue between or with children. In examining the dialo-ues of her twin sons (2;9) Keenan (1974a) observed that repetition occurred frequently in the boy's interactions. She contrasts repetition with imitation arguing that imitation, an attempt, successful or unsuccessful, to copy a model, has as its function the approximation of all or part of a preceding utterance while, repetition is the total or partial reproduction of a precedin- utterance to serve various discourse functions.[2] (Keenan, 1975b). Some repetitions will also be imitations just as some imitations will be repetitions. The distinction between the two will be determined by the speaker's intentions. While it is not claimed that the speaker's intentions are easy to determine, it is argued that "the presence or absence of the intention to imitate must be reckoned with." (Keenan, 1975b).

Formally, Keenan observed several types of repetition: full or partial (these are called the basic focus function); basic focus function (BFF) in combination with other changes; BFF plus prosodic change; and BFF plus constituent embedding.

The form of the repetition is of interest on several accounts. First, it is related to the function of the repetition. Prosodic shift, for example, may be used in instances where the addressee claims that what the speaker said is also true for himself.

(5) A. I'm grownup.

B. I'm grownup.

Likewise it may be used to query a previous utterance.

(6) A. (Pointing to drawing on blackboard)minnie mouse/

B. --- a tiger.

A. minnie mouse/

C. (looking at blackboard, turning to B) mickey/minnie↑/ minnitie/

A. (pointing) minnie mouse/

C. (C doesn't seem to have heard of minnie mouse)
minnie mouse/ mickey mouse↑/

A. minnie mouse/

C. minnie mouse↓/ minnie mouse↓/ (Keller-Cohen 1976 and Gracey)

Second, what is repeated serves to establish what is known between conversational partners.

(7) (alarm clock rings)

A. oh oh oh/ bell/

B. bell/

A. bell/ its mommys/

B. (unclear)

A. its mommys alarm clock/

B. alarm clock/

A. yeah/ goes ding dong ding dong/ (Keenan 1974a)

The juxtaposition of <u>given</u> and <u>new</u> in (7) is another important discourse function served by repetition.

Last, we might expect the form of repetitions to change as the child's language development progresses. The child may move from using reproduction repetition to expanded and embedded repetitions (Bloom, <u>et. al.</u>, Note 4). Likewise, the functions of a repetition structure may also change across time. The ontogenesis of repetition as a discourse process should be a fruitful area of investigation (Keller-Cohen and Gracey, 1976).

A process related to repetition is substitution which like repetition, also creates formal cohesion. In substitution, a prior utterance is repeated

with the following change: one constituent of that utterance is replaced by another constitutent serving the same function.

(8) A. One fish?

B. gold fishes/ special fishes/ very pretty fishes/ e:h/ everything/

(Keller-Cohen, Note 8)

Keenan (1975a) has argued that while repetition and substitution both appear in early discourse, the latter reflects more advanced linguistic development. She found that the relation of substitution to repetition (focus function) increased over time in her twin son's language.

In the preceding discussion of formal and functional cohesion it is certain that relevant research has been overlooked. (See Keller-Cohen, Note 8 for a further discussion of cohesion in children's discourse.) However, it is hoped that what has been presented serves to indicate some of the important research in coherence in children's discourse.

Research prior to the 1970's was concerned primarily with the form of children's utterances. Only occasionally was attention paid to what children were doing when they used particular linguistic forms. Questions were formulated for the purpose of describing the syntactic rules that the child was thought to have learned in order to ask questions and deny statements, for example. Attention was not turned to how one utterance type was used to meet different communicative intentions or how different forms communicate the same intention (Dore, 1976). Considering how children use language to do things like requesting, describing, protesting and the like provides a framework in which we can tie together the linguistic and non-linguistic behavior of the child. This framework no longer

makes it necessary to use potentially discontinuous explanations for different stages in language development. For example, pragmatic explanations enable us to describe pre-speech, the single word stage (Dore, 1975) and later stages of language development (Dore, 1976; Bates, 1976b) in related ways. In addition, we are able to relate the form and function of an utterance to the social and behavioral context in which it's produced.

The great difficulty facing us at present is identification of the range of intentions in children's speech. It has been argued that the frequency and range of intentions is so vast that it is difficult to isolate all of them. While this is true for both adults and children, it holds more so for the latter since it is extremely difficult to elicit reliable (or any) judgments from children about their intentions.

Some of the preliminary attempts at identifying a range of communicative intentions in children's utterances can be found in the work of Dore (1975; 1976) and Keenan (1974b). Other efforts have been made but they deal with a subset of communicative intentions. Dore (1976) in particular, has developed a system for determining the illocutionary force of a child's utterance. His discussion is particularly useful in that he provides us with a decision-making procedure for determining what the illocutionary force of a child's utterance is. Although reliability achieved in coding the illocutionary force of utterance was not as high as one might like (Dore reports 82% in inter-rater reliability), it represents an attempt worth reckoning with.

In determining the illocutionary force of an utterance, Dore (1976) includes: the primary properties of the semantic reading of an utterances; related linguistic and non-linguistic behavior of the speaker; expression of new information; contingent verbal and non-verbal behavior of the interlocutors;

grammatical and prosodic operators; and finally relevant contextual features. The end result of Dore's coding was the identification of 32 types of communicative intentions underlying illocutionary acts which fell into 6 categories: Requests, Responses, Descriptions, Statements, Conversational Devices and Performatives.

Dore also examined some of the alternative forms the children used to express particular illocutionary acts and the sociolinguistic rules governing the use of these illocutionary acts. His analyses indicate that children's conversations do reflect knowledge of conversationally-based rules. Further research in this area might consider the following questions: Which sincerity conditions or rules underlying the use of sincerity conditions are acquired first and why? One might expect that the rules with the widest domain of application, i.e., those used in the greatest number of illocutionary acts should be acquired first. We do not know as yet if there is an acquisition hierarchy of sincerity conditions (or rules underlying the use of them) in discourse. If there are not, what linguistic or non-linguistic factors account for this order? Ultimately, a theory of children's discourse will have to account both for the early acquisition of some conversational rules and the late acquisition of others.

How and when do children understand requests?

While Dore (1976) was hesitant to make claims on the frequency of different illocutionary acts, it is worth noting that requests were the most frequent type of illocutionary act. This may in part explain why much of the research on children's discourse deals with questions and requests. Bloom, et al. (Note 4) looked at the responses of 4 Stage 1 children to direct and indirect requests.

They found no difference in the frequency with which the children responded appropriately with actions to both indirect and direct requests. They also found that the children's action responses were accompanied by contingent speech (speech which shared the same topic with the request and added new information) as frequently for direct requests as for indirect requests.

Shatz(1975) reports the responses of 15 Stage 1 children to indirect and direct requests (question-requests and impreatives). As in Bloom, et.al.(Note 4) no difference was found in the frequency of action responses to these two request types. However, Shatz reported that contingent speech did not often accompany action responses. Bloom, et.al. (Note 4) have suggested that the low frequency of action plus contingent responses in Shatz's data may have been due to the task oriented nature of her study Bates (Note 2) used both a task-oriented and spontaneous speech situation to collect responses to indirect and direct responses. While I was not able to obtain Bates (Note 2) prior to writing, it may provide evidence for deciding whether the task orientation of Shatz' study was a significant factor in suppressing action plus contingent speech responses.

Both Bates (Note 8 as reported in Bates,1976b) and Shatz (1975) reported that young children's comprehension of request forms may be largely dependent on their use of non-verbal information conveyed by the requestor. The fact that Garvey (1975) and Dore (1976) do not attribute the comprehension of indirect requests to non-verbal cues may be due to the age child participating in the investigations (for Garvey and Dore 42-67 months

combined for both studies). The children discussed in Bates (Note 2) and Shatz (1975) were younger.

The comprehension studies just discussed do not report an age at which indirect requests are not understood. Since the children seem to use non-verbal cues to respond to requests, research which is designed to control for the effect of non-verbal cues should be addressed to this question.

When do children produce requests? The acquisition order of different request forms in production has been the focus of four investigations of which I am aware. Ervin-Tripp (1974a) reports that imperatives (direct requests) precede indirect requests in comprehension and production. In a related paper, Garvey (1975) examined the speech of 12-4-year olds and 24 5-year-olds for requests for action. While she was more interested in the sincerity conditions for those request forms, her data reveals a relative difference in the frequency of indirect versus direct requests.[3] In considering the following frequencies recall that there were twice as many 5 year olds as 4 year olds: Direct Requests $\frac{\text{4 yrs.}}{\text{5 yrs.}}\ \frac{270}{412}$; Indirect Requests $\frac{\text{4 yrs.}}{\text{5 yrs.}}\ \frac{18}{57}$. These data suggest that the production of indirect requests is a later development.[4]

This is in agreement with Bates (1976b). She reports longitudinal data from 2 Italian children. While more indirect requests were generally not used until the children were between 3½ and 4 years ("We haven't had ice cream for a long time" some indirect requests (interrogative-imperatives) "You open door?" were used as early as 1½ years. Similarly, Aksu (Note 1) found that indirect requests were late acquisitions in Turkish children.

Do children display knowledge of the sincerity conditions for requests and responses? Garvey (1975) reports similarity between the sincerity conditions in adult requests and those reflected in 4 and 5 year olds requests for action.

Further research must consider whether these meaning factors (Garvey's terminology) are acquired together, separately or in clusters.

[redacted] (in press) analyzed children's responses to questions. His subjects were 7 children, approximately 36 months old. He isolated hearer-based sincerity conditions while Garvey (in press) reports speaker-based sincerity conditions for one type of request, the contingent query. Space does not permit an analysis of these data. What is important here is the finding that children exhibit knowledge of the conversational rules underlying different types of speech acts. It is hoped that subsequent investigations will examine other types of speech acts. It may turn out that there is a core of sincerity conditions that children's illocutionary acts share. The differences between illocutionary acts may determine a hierarchy of acquisition. It will also be necessary to examine the syntactic and semantic correlates of sincerity conditions within and between types of speech acts.

Clearly, much more could be said about research into the pragmatics of children's discourse. For example, I have not had time to discuss the fascinating work Liz Bates (1976a) has carried out on Italian children's comprehension and production of politeness forms. Research into pragmatics is immeasurably important for our understanding of language as a part of the child's social and cognitive development.

Semantics

Most investigators who are involved in the study of children's language would agree that attention to the acquisition of semantics grew in part out of dissatisfaction with syntactic explanations for children's knowledge of their language. These explanations were derived to some extent from theories of linguistic innateness which made varying claims about the type and amount of linguistic knowledge with which humans are born.[5] It became painfully apparent that we were both missing important generalizations about the data and that we were unable to account for many of the things children seemed to be doing as they learned to talk. Dissatisfaction with syntactically based explanations appeared in most areas of child language.[6] At the single word stage syntax was invoked in the argument that children either know about or 'intend' sentences before they use them. This view of the single word utterance as 'syntactic' has been criticized by Bloom(1974a) and Dore (1975) among others. Similar criticisms were leveled by those working on descriptions of children's multi-word utterances. Bowerman (1973a) argued "...the use of transformational generative grammars to represent children's competence involves postulating certain kinds of linguistic knowledge for which there is little evidence in child speech." (1973:75) (See also Bowerman, 1973b; Brown, 1973; Bloom, 1974a)

Schlesinger (1971, 1974) proposed a model of early language acquisition using the speaker's intentions (I-markers), those distinctions made cognitively that are relevant for the production

of language. Brown (1970), influenced by the work of Schlesinger and Bloom, suggested that semantic descriptions captured more generalizations about relations in children's early speech than did syntactic descriptions. Similarily, they accounted quite easily for children's productions across vastly different languages. Perhaps even more importantly, a semantic description bore a close relationship to achievements at the same time in the child's cognitive development.

Piaget and his associates have long argued that language is a sub-part of the development of symbolic functioning in the child. Language, at least initially, does not structure thought but is structured by it (Sinclair-de-Zwart, 1969; Nelson, 1974). While the relationship between language development and cognitive development raises a host of issues their interaction cannot be adequately discussed here. Nevertheless, it is worth observing that investigators in child language have been significantly influenced by issues raised in the study of cognitive development. In fact, many of the issues surrounding the study of the ontogenesis of semantics involve assumptions about the child's cognitive and perceptual development. The following discussion examines the acquisition of word meaning and raises questions, presented in summary form, about meanings present in the child's speech once he has begun combining words.

The acquisition of word meaning

The literature is abundant with reports of children's use of words. Common to these discussions is the observation that children frequently use words in ways that are somehow different from the normal adult usage. For example, Bowerman (1975) reports that her daughter Christy used moon when looking at the moon, later when looking at the view of the peel side of

a grapefruit, a chrome dial of the dishwasher, a magnetic D on the refrigerator, a half cheerio and her hangnails. Leopold (1939, I) presented a rich description of his daughter Hildegard's acquisition of words. She used tick-tock first in reference to her father's watch. Subsequently she supplied it when she noticed some other clocks and watches. Soon a gas meter, a fire hose spool, and a bathroom scale were labeled tick-tock. Nearly a year later, after her first production of tick-tock, Hildegard used it to refer to a round typewriter eraser. Leopold reports that she even held it up to her ear (Vol. III:127).

Observations like the preceding led investigators to ask about the nature of children's word use. Increased activity in this area of research has led to many as yet unresolved controversies. Some of what appeared to me to be important issues are treated in the section.

1) How does the extension of meaning take place? Do children over-extend, under-extend or use words in manners otherwise different from the adult? Similarly, hov are referents related for which the child uses the same label?

2) On what basis(es) are labels assigned to referents? What aspects of the environment are encoded in the meaning of a word?

3) How do children store information about word meaning?

Extension of word meaning.

> "That's a great deal to make one word mean," said Alice in a thoughtful tone.
> "When I make a word do a lot of work like that," said Humpty Dumpty," "I always pay it extra."
> "Oh," said Alice. She was much too puzzled to make any other remark.
>
> Lewis Carroll Through the Looking Glass

Controversies over the extension of children's words revolve around the domain and type of referents to which the word is attached. There are a number of different ways the child could use words to refer to aspects of the environment. First, he might use a word to refer to a broader range of referents than the adult would. This is termed over-extension. Luria and Yudovich (1971) report that the Russian-speaking twin boys they studied used morkovka (carrot) to indicate a carrot, a plum, a turnip and a watermelon. Gunther, the son of Clara and William Stern, used psee for trees, leaves and flowers (1920). In a comprehensive review of diary studies describing children's linguistic development across many languages, Clark (1973b, 1974) found over-extension to be a common occurrence. Clark explained over-extension by the following:

> When the child uses a word and over-extends it, he appears to do so because he has identified only some of the adult conditions of application for that word... That is, the child is using whatever criterial properties he has picked out, and only those, whenever he over-extends a word. (Clark, 1975)

She adds that whatever those properties are, that is what the word means to the child. For example, a child may have identified the properties 'adult' and 'male' for papa. He hence uses it not only for his father but for all adult men (Leopold, 1934, I).

Since Clark's original proposal regarding over-extension, additional evidence suggested that this process might be more complicated than first proposed. For example, there may be instances of over-extension that sometimes incorporate some of the adult properties; other occasions of application of that word may bare little if any resemblance to any of the adult properties. Bowerman's daughter Christy used hi as a greeting (as the adult would) and in a very strange manner: as she held a drop of water on the end of her finger; when a washcloth passed over her foot in the bathtub; and when she held her hands up inside her snowsuit (Bowerman, in press). Apparently, Bowerman played a game with Christy that led her to the latter over-extensions. She put a pen cap or finger puppet on one finger and pretended that this was a little person coming to greet Christy. The play person greeted Christy with hi. The cover over Bowerman's finger came to be used as a property of hi. Hi was therefore extended to situations where there were coverings over hands and ultimately over feet as in the bathtub example above. Bowerman (in press) suggests that while some properties of the adult meaning were first used for hi, other aspects of situations in which hi was used also became part of the meaning. Important here is the observation that while adult related properties may be criterial for the use of a

word, properties noticeably different from the adult's may also be included. Whether the basis for the initial meanings assigned to a label are drawn from adult usage is a question that merits further investigation.

Over-extension has generally been discussed with reference to the product side of the child's competence. There are some indications that a label extension in production may not be so in comprehension. Thompson and Chapman (1975) studied over-extension in comprehension and production of 5 children who were between 21 and 27 months. Words that each child over-extended in production were used in testing the child's extension of these words in comprehension. Roughly speaking, each child was presented with an appropriate exemplar plus exemplars that were instances of the over-extended use of a word. Each child was asked to point to the X. One of the children never picked the exemplars to which he had over-extended a given label in production; 3 sometimes picked one exemplar to which a label had been over-extended; one always picked the exemplars for which the label had been over-extended.

The disparity between over-extension in comprehension and production led Clark to modify her original proposal. She suggested (1975) that there are instances of partial over-extension, where the child selects "only some of the original properties he has identified with the meaning of a word when he over-extends it." (1975:7) Further research ought to investigate the relationship between instances of partial and full over-extension within and between children. Questions that might be asked are: Is there a developmental relationship between full and partial over-extension? Are certain kinds of referents more likely to elicit one type of over-extension rather than the other? Can we predict with any reliability whether a child will employ

full or partial over-extension? What is the 'motivation' behind opting out of using some properties in certain instances and not in others?

A second type of extension occurs when a child uses a word to refer to a more restricted domain of referents than would the adult. This is termed under-extension. The reports of under-extension are far fewer (but see Bloom 1973; Huttenlocher, 1974; Bowerman, in press; Nelson, 1973b, 1974). Anglin (1975) argues that under-extensions are reported infrequently in diaries because they record when children use words, excluding non-use which is potentially infinite. For example, a child may only use kitty to refer to a subset of cats, perhaps his own and those that belong to friends. If he sees a cat that does not fall into that category, he may simply not label it at all. There is no way to know from the diary reports of the occasions on which child did not use a label.

I suspect a more common situation is the one which Anglin calls over-lap. Here the child uses a word to refer to some of the referents the adult would, excludes some of the referents the adult would include, and includes some of the referents the adult would not include. It's possible that some of the existing diary reports of over-extension may in fact be instances of over-lap. For example, Moore (1896 cited in Clark, 1973b) found that bird was first used to refer to sparrows: later it was applied to cows, then dogs, then cats and then to any animal moving. The data do not tell us whether all birds were labeled bird or just sparrows (See Bloom, 1973, 4.2)

Bloom (1973) tries to order the different kinds of extension. She proposes 3 stages in the acquisition of word meaning. The stages do not refer to the ontogenesis of each word. Rather, each stage characterises a period of extension that operates on the acquisition of words acquired during that stage.

At first (phase 1), the child applies a label to things that he has loosely associated. No one criterial feature relates them. Vygotsky (1962) described the relationship shared by these referents as 'a chain complex'. There is no nucleus relationship between the objects or events refered to by the same label. A is related to B, B to C, C to D but D shares nothing with A or B, for example. Bowerman's example (1975) of her daughter's use of kick is of this type. First, it was used as she kicked the floor fan; next as she watched a moth flutter; later prior to throwing an object and so on. It is important to observe that phase I words that share the same label are part of an extremely amorphous semantic domain. As we shall see, this is different from later over-extensions. Bloom (1973) suggests that the lack of object permanence at this stage contributes to the fluidity of meaning and the rapid abandonment of labels (R. Clark, 1975).

In phase 2 the child restricts the domain of a word so that car for example, refers only to certain instances of a car. Gradually car is applied to more instances of a car.

In phase 3 a label is not applied to a subset of the potential referents as in phase 2; nor are the referents members of various adult semantic classes as in phase 1. Instead, a label is applied to all those referents that share one or more criterial features. So all four-legged animals are called dog. It is not entirely clear how phase 2 and 3 differ. It seems that under-extension is part of 2 but not 3. Whether these

stages are an accurate characterization can only be determined by future investigations. Even if it turns out that Bloom is in error, we will at least have more closely scrutinized the developmental relationship between processes that operate in the acquisition of word meaning.

At this point in our understanding of the extension of word meaning, it seems that different processes are operant. It is not clear however, at what points these processes are used and to what extent they are functional across children.

In the preceding discussion it was observed that children attend to different aspects of their environment and use this information as a basis for labeling. A major source of disagreement surrounds what aredeemed to be important sources of data for word use. Currently two views are held. Some investigators maintain that the child attends to perceptual similarities of objects, events and activities. This refers to a likeness that can be identified through perception from auditory, visual, olfactory and tactile stimuli (Clark, 1973; 1974). In contrast, Nelson (1973a, 1974) has argued that children base their first use of words on the functional relationships into which the referent(s) for that word enter. She claims that children are initially unable to analyze objects, events and activities into

the features that define or describe those things. This argument is in part related to the Piagetian view that concepts develop out of the child's sensori-motor schemes. Here the child's knowledge about the word arises out of his actions on objects in the environment. While Nelson considers Piaget's theory to be inadequate in a number of ways, she feels it is useful in its applications to the development of concepts and language learning.[8] Nelson argues that features are relevant once the child has developed a concept of X, thereafter using features to identify hew instances of X. The reader is referred to her 1974 article for a fuller explanation of this position.

The data to support the importance of perceptual similarity are plentiful. Bowerman (1975) found that the major source of extension in the productions of her daughters was perceptual features in general and shape in particular. "The predisposition to use shape as a basis fo classifying objects together was often so strong as to cause the children to call items which were clearly functionally dissimilar for them by the same name." Clark (1973b) examined a wide range of diary studies and reported numerous over-extension based on perceptual similarity. Anderson (1975) examined children's extension of cup and glass. Her subjects were 23 children between 3 and 12 years of age. She reports that younger chidlren tended to use perceptual properties in differentiating cups and glasses while the older children used cultural and functional criteria to determine class membership. A related finding is reported in Anglin (1975). He asked adult judges to rate pictures of ob-

jects in terms of their perceptual (balloon to 'apple'), functional (sled to 'car') and contiguous similarity (saddle to 'horse') to a concept. He found those objects rated as perceptually most similar to a concept produced the most over-extensions; contiguity was next; functional similarity produced the fewest over-extensions. He reports this finding in both production and comprehension.[9] Likewise, a reading of Leopold's discussion of Hildegard's acquisition of words reveal extension primarily on the basis of perceptual properties (1939,I).

Evidence for function as the source of extension is considerably sparse. Nelson (1973a) reports functional rather than perceptual properties as the basis for extension. However, Clark (1975) points out that Nelson's task did not clearly separate functional and perceptual properties. K.E. Nelson and Bonvillian (1973) examined the extension of words in children around 16 months. In a laboratory setting over a six month period, the experimenters regularly presented exemplars of 16 unfamiliar objects and their labels to the children. Among other things, they found shared function a factor in over-extension. While this finding may in part be due to the acquisition setting, it does provide some support for the salience of function in extension and over-extension.

At present the data seem to support the salience of perceptual over functional properties in the extension of words. It may be that perceptual similarity is more important for certain things, objects for example, and functional properties for others, perhaps relations and actions (Clark, 1975). Re-

search investigating what is salient in over-extension is in order.

Whether children attend to perceptual or functional properties of objects is in some ways related to views about the source of word meaning. Some investigators (Rosch, 1973; Rosch, et. al., Note 9; Anglin, 1975) argue that the concepts which underlie the use of a word are stored as prototypes. Prototypes are schemata or relational patterns formed by the speaker that represent the best or clearest example of a member of a category. It is proposed that the way in which the child uses the word ball reflects his representation of the prototypical referent of ball. In contrast, others have claimed that the source of the meaning that a child assigns to a word is the feature or features into which referents of a word can be analyzed.

Anglin (1975) cites evidence in support of storage by prototype. He observed that "the fact that children's overextension errors are predominantly to instances which are perceptually similar to instances of a given concept is consistent with the notion that what is stored may be the typical form of the instance of a given concept, e.g., a prototype." Similarly Rosch, et. al. report data on young children's labeling that suggest storage in terms of prototypes.

Bowerman (1975b) suggests that both features and prototypes may underlie children's word use. Citing data from a longitudinal study of her daughters' speech development, she argues that a combination of both features and prototypes best explains the girls' word use. She adds that "prototypical

referents are ones for which the word was certainly or probably most frequently modeled, and in connection with which the word was usually first produced spontaneously."

At this point in the review, it is clear that a host of issues and questions relevant to the acquisition of the lexicon have been omitted. Moreover, because of the necessity for including other areas of research, I am unable to include a review of issues pertaining to children's multi-word utterances. Therefore, in the concluding portion of this section I offer the reader a list of questions that I have not had time to address but which appear to be both relevant to bilingual education and important for our understanding of semantics.

1) How does thechild's cognitive development interact with his use and understanding of lexical items? (Beilin, 1975; Donaldson and McGarrigle, 1974; Ferreiro, 1971; Ferreiro and Sinclair, 1971; Keller-Cohen, 1974a, 1975; Kuczaj and Maratsos, 1975; Piaget, 1955; Weiner, 1974)

2) How does the child apply non-linguistic strategies in the acquisition of word meaning? (Bever, 1970; Clark, 1973a, 1975; Clark and Garnica, 1974; Clark and Sengul, 1974; Keller-Cohen, 1973, 1974a) This question is particularly relevant to bilingual education. As Clark points out (1975), the second language learner in a second language setting must rely on all sorts of contextual cues in order to decode another's utterances.

3) Do all children follow the same route in acquiring the meaning of any given word? (Clark, 1971; Clark and Sengul, 1974. See Bloom, et.al.,1974 and Bloom, et.al, 1975 for a discussion

of this question in reference to multi-word utterances).

4) Related to 3-- Do children differ in terms of the functional type of vocabulary acquired? That is, at least initially, do they view the function of language differentially? Nelson (1973b) reports longitudinal data on the first 50 words of 18 children between 1 and 2 years of age. She found that some of the children tended to do more object naming (Referential Group) while the other children (Expressive Group) tended to use slightly more personal-social words like please, thanks and stop it relative to the Referential children. There is also a bit of evidence that this may be a relevant distinction for very young bilingual children. In an analysis of the vocabulary of Leopold's bilingual daughter Hildegard during her first 18 months, I found strikingly more personal-social words than referential words. At present, we do not know what implications this difference has for later language development.

Turning now to some broader issues:

5) What type of underlying knowledge can be attribute to the child when he combines words into multi-word utterances? One major area of disagreement here involves whether children at this stage can be thought of as having knowledge of syntax. (Bloom, et.al, 1974; Bloom, et. al. Note 4; Bowerman, 1973a, 1973b, 1975b, in press; Brown, 1973; Gruber, 1973; Schlesinger, 1971, 1974). Briefly, Bloom, et.al. (1974, Note 4) argue for the knowledge of syntactic relations like 'subject of' in early syntax. Bowerman (1975b) has questioned Bloom et. al.'s choice of evidence for syntactic relations.

6) What accounts for variable length in children's multi-word utterances? Is it performance constraints? Are grammatical rules like reduction operant? (Bloom, 1970; Bloom, et.al.,1974; Bowerman, 1973a;Brown, 1973; R. Clark, 1974) This question can also be asked as follows: Is variable length in part due to progress in one area of linguistic development simultaneous with regression in another?

Child Second Language Acquisition

The fact of second language acquisition is clearly established throughout history. In some cases two or more languages are acquired simultaneously. This type of non-native language acquisition is less frequent in this country than in many others. In other instances, a speaker acquires a second language either after he is relatively fluent in his first language or after he has made a fair amount of progress in one language. I use the expression 'relatively fluent' since the progress of first language acquisition continues well beyond the first few years of life (C. Chomsky, 1969). This latter case, where the process or acquiring two languages does not begin simultaneously, is more frequent in this country.

The problems that the child second language learner encounters may be different in many ways from those with which the adult is faced. While there are important differences between child and adult second language learning this review examines questions regarding the relationship between first language acquisition and child second language acquisition.

Relationship between first and child second language learning

There are at least 4 tentative hypotheses that one could propose regarding the relationship between first and child second language learning in children.

1. There is no correspondence between first and second language learning in children.

2. Developments in the second language will follow the same path as that which is followed when that language is learned as a first language.

Here the claim is that for example, when a Spanish-speaking child is in the process of acquiring English as a second language, he will follow a course similar to that followed by a native English speaking child.

3. Developments in the second language can be traced to structures in the child's native language.

4. Developments in the second language will not be traceable to the native language or to the second language.

A strong version of hypothesis 4 might claim that when a child produces an utterance in the second language his utterance is both formally and functionaly completely different from his native language and from the second language. Clearly, this could not be the case, i.e., he could not construct an utterance that bore no relationship to either language. Instead this hypothesis must mean than some utterances or parts of utterances

will be both formally and functionaly like both of the speaker's languages. At the same time, the utterance will differ in ways that may be explained by strategies that a speaker employs in learning a language. This may involve a variety of strategies that operate across language, those of the type proposed by Slobin (1973). This view of hypothesis 4 is in some ways similar to that proposed by Macnamara (1975).

The following sections consist of several parts. First, evidence that first and child second language learning follow similar courses is reviewed. Second, research bearing on the systematicity within child second language learning is considered. Third, evidence for variability in child second language learning is examined. Discussion of each of these topics will necessarily be brief. Hopefully, treatment of these issues will shed light on the relationship between first and second language acquisition in children.

Similarity between child first and second language acquisition

There are at least two ways of examining the similarity between native and non-native child language acquisition. One could look at the order in which parts of the language are acquired. Some investigators have looked at the acquisition of morphology (Dulay and Burt, 1972, 1973, 1974a, 1974b, 1974c). Others have examined similarities in the acquisition of syntax

(Ervin-Tripp, 1974b; Hatch, 1974; Huang, 1970). Investigations comparing semantics are much less frequent (Tarone, Frauenfelder, and Selinker, in press). On the other hand, one could look at the status of one item, strucutre or process at one point in time and ask how and if it is related to first language learning (Dulay and Burt, 1973; Ervin-Tripp, 1974b; Keller-Cohen and Dennis, 1975; Selinker, Swain and Dumas, 1975).

The study of child second language has followed a course similar to the study of first language acquisition. Until recently, a large portion of the research was devoted to morphology and syntax. The initial evidence suggested that there was significant similarity between native and child non-native language acquisition in terms of both strategies and the production of certain forms and structures. Initially, Dulay and Burt (1972, 1973) found that there appeared to be similarities between the two processes. Their evidence came from several diary reports and a cross-sectional study of spontaneous speech elicited from well over 100 Spanish-speaking children between 5 and 8 years old. Particularly in the large group study, they found well over the majority of the second language speech productions (the Spanish children speaking English) followed the same patterns as those in English as a first language. Further analyses by Dulay and Burt (1974a, 1974b) brought these results into question. (See pgs. 42-43 for a discussion of conflicting results). Natalicio and Natalicio (1971) investigated the acquisition of English pluralization rules in native English speakers and native Spanish speakers in Grades 1-3 and grade 10. The instrument used to elicit production of the plural was similar to Berko (1958) in its use of nonsense syllables. The authors found a similar order of acquisition of pluralization rules in both groups of speakers.

More common than findings of similar order are reports of the use of similar processes and strategies in child first and second language acquisition. Dulay and Burt (in press) have characterized this as a transfer of the learning process. As Ervin-Tripp (1974b) suggests, this is hardly surprising. "If the human brain is especially competent to deal with language learning, there is no reason to suppose this ability would confine itself to the first language." (1974b:112) Slobin(1973) reports similarities in acquisition strategies across first languages. (See a related discussion in Slobin, 1975). Similar findings are reported in Ervin-Tripp (1973b). For example, early in language acquisition children seem to make hypotheses about word order. Looking at English-speaking children learning French in Switzerland, Ervin-Tripp (1973b) reports strategies of interpreting NVN sequences similar to those of native Swiss-French speaking children (Sinclair-de-Zwart, 1973).

Over-generalizations or overregularizations are frequently reported in many areas of first language acquisition (Gvozdev, 1961; Omar, 1970; Popova, 1958). In languages with gender distinctions marked inflectionally, the child may first use one gender for all cases (Popova, 1958). Hansen-Bede (1975) reports that an English speaking child learning Urdu used masculine Urdic forms for both masculine and feminine. Leopold's daughter used my for a period of time for both mine and I (1939.I:100-106). Likewise, regular past tense forms may be used in place of

irregular past tense forms (Ervin, 1964). Dulay and Burt (1972) report treatment of irregular past tense forms as regular--weared for wore. Selinker, Swain and Dumas (1975) investigated the progress of English speaking children in a French immersion program. They found that the infinitive was used for infinitival, present time and future time meanings. Many other examples of strategy similarity have been reported but the preceding examples should suggest that these similarities seem to operate across language and across language learning (child first and second language).

Evidence that there are dissimilarities between first and child second language learning is also present. Most studies that deal with this question find that acquisition order differs (Cancino, Rosansky and Schumann, 1974 and Rosansky, Schumann and Cancino ,1974). Cancino, et.al. investigated the acquisition of English as a second language by native Spanish speakers (7 adults, 2 adolescents and 2 children). Among other things, they were interested in the acquisition of the negative. They found that none of their subjects followed the acquisition order in using the negative reported in Klima and Bellugi(1966).

Dulay and Burt (1974a, 1974b) investigated the acquisition of 11 English functors in 60 Spanish speaking and 55 Chinese speaking children from 6 to 8 years of age. Using a variety of scoring methods they found that the order of acquisition was generally consistent within the second language learners, but differed from the order reported in first language acquisition. Both Dulay and Burt (1974a, 1974b) and others

(See Tarone's reply in Working Papers in Bilingualism 4) have discussed the different assumptions made about the data and the information created or lost in the scoring methods be they rankings, trees or hierarchies. I will not attempt to recapitulate those positions here. Likewise, I will not be able to address some of the questions that have been raised about Dulay and Burt's ranking of the first language acquisition data. These issues merit attention that I am unable to provide here. Relevant for our present discussion is the finding that the order of acquistion of the phenomena studied appears to differ for child native and non-native languge acquisition.

Hakuta (1974) followed the speech development of a Japanese girl, Uguisu, acquiring English as a second language. Like Dulay and Burt (1974a), he compared Uguisu's order or morpheme acquisition with Brown's longitudinal data (1973) and two different rankings in de Villiers and de Villiers (1973). He found that Uguisu did not follow the same order of acquisition as the first language learners. For example, she was much later in acquiring articles (Japanese does not make the definite/indefinite distinction) and irregular past tense forms. For the examples cited above, there do seem to be differences between child native and non-native language acquisition. At present, the difference appears to be in terms of order of acquisition rather than in terms of different language learning strategies. Discrepant acquisition orders may be due to whether distinctions are present or absent in the first language, a hierarchy in acquisition or processing strategies.

Further investigation into strategies as an explanation for order in child first and second language acquisition should provide relevant insights for bilingual education.

Evidence for systematicity in child second language acquisition

It seems appropriate to ask whether there is evidence for systematicity within child second language acquisition since we have already seen that children acquiring a first or second language seem to employ similar strategies. This should suggest internal systematicity in child non-native language learning. What evidence exists?

Hatch (1974) has reviewed 15 observational studies of 40 second language learners. While not all were children, many examples cited were from children's utterances. Their native languages were Spanish, Japanese, Persian , Norwegian, and French among others. Similar orders of acquisiiton were found in Aux development, Aux + Neg and Aux inversion in Question formation.

Dulay and Burt (1974a, 1974b) examined the acquisition of English by Spanish and Chinese children. They report a highly significant correlation in the order of acquisition of 11 functors between both language groups. Likewise, Rosansky, Schumann and Cancino (1974) found that their Spanish speaking subjects acquired the English negative in similar stages.

Fathman (1975) looked at responses of 120 native Spanish and Korean children acquiring English as a second language. The subjects were between 6 and 14 years of age. In particular she investigated their production of 20 grammatical contrasts. She found that the acquisiiton order for these

contrasts was highly correlated for the two groups of children.

One noticeable factor in these studies is the focus on morphology and syntax. The impetus for studies in these areas is partially due to the wealth of data on the same in first language acquisition and the easily quantifiable nature of morphology in particular. Nevertheless, I would argue that we ought to be looking at the purposes for which non-native speakers use language and ask whether there is similarity shared with first language learning. This does not mean that syntax and morphology are not both interesting and worthy of consideration. Instead, I claim that in order for us to be able to make statements about similarity within child second langauge learning, we must consider all parts of this process. There are few studies of pragmatics in child second language learning (however see Keller-Cohen and Dennis, 1975). Semantics is equally infrequent in child second language learning (however see Tarone, et.al., in press). Further research into these other areas seems quite necessary.

Variability in second language learning in children

In our attempt to describe acquisition in children's speech, there has been the tendency to think in terms of universals and similarities (Hatch, 1974; Slobin, 1975) rather than differences (Bloom, et.al., 1974; Brown, 1973; Tarone, et.al., in press). Recently, investigators have become increasingly aware of variable paths in the acquisition of language. Clark (1975) reports different strategies in the acquisition of after. Nelson (1973b) found differences in the functions for which young children use

language. Bloom, et.al., (1975) observed that while the 4 children in their study followed similar developmental patterns in the acquisition of syntactic-semantic relations, they differed in their lexical representation of these relations, two children using pronominal reference and 2 nominal reference relative to verbs.

The presence of variability in child second language acquistion has been observed in recent papers (Hatch and Gough-Wagner, in press; Swain, 1975; Tarone, et.al., in press). Some of the variability among child second language learners from different native language groups must certainly be due to hypotheses based on the mother tongue (Hatch and Gough-Wagner, in press). We are indeed lucky if we are able to find a reasonable explanation as simple as interference. However, when we use mother -tongue influence as an explanation, we must also explain why the native langauge does not enter into other hypotheses about the second language. For example, why did Ravem's son Rune rely on Norwegian word order for English question formation in some cases but not in others? (Ravem, 1968). Hatch and Gough-Wagner (in press) have observed that Ross' centralness/peripheral dichotomy may explain some variation in second language learning in children. Differences in cognitive organization (Nelson, 1973a, 1973b) may explain variability in other instances. Differences in the way speakers perceive the importance of various pragmatic functions may also contribute to variability. One particularly interesting explanation is the differential role of input. Hatch (1974) found a correspondence between the frequency of different Wh-

questions in adult to child second language speech and the acquisition order of those forms. Swan (1975) speculates the frequency of masculine over feminine forms in French accounts for pronoun errors in children's acquisition of French as a second language. Bowerman (1973a) found that the most frequent construction in the speech of Rina's mother was Proloc + N; not surprisingly it was also Rina's most frequent form. In a related study Nelson (1973b) found that certain types of language use in mothers were related to different functional uses of language by children. Ervin-Tripp (1970) suggests that strategies children use in answering questions may be related to the frequency of certain Wh-forms in adult speech.

The potential sources of variation are vast. The explanations offered here are subject to refinement, correction or rejection. While it is important to explain why speakers are similar, it seems equally important to explain why they differ.

Conclusion: Implications for Bilingual Education

In this review I have tried to indicate what some of the interesting and important questions currently are in developmental psycholinguistics. Where it seemed appropriate, suggestions for future research have been offered. I would now like to identify areas for future research that would be particularly relevant to the questions and needs in bilingual education.

1. Pragmatics

a. In what order do children in first and second language acquisition acquire communicative functions? Are certain pragmatic functions perceived to be more important than others? This question might be examined both in terms of

order and frequency in acquisition. Other indices should also be considered. It would make sense to first teach children how to use language for the functions that are most important to them. This is in agreement with Dulay and Burt (in press).

b. What are the similarities and differences in how native and non-native children employ rules of conversation? What rules do the non-native children have difficulty learning and why? Here we should be concerned not only with the form of the rule but the pragmatic and sociolinguistic information necessary for using the rule. This should be a particularly important area of research.

c. How does the child make himself understood in a second language when he has failed in an initial communication attempt? Little is known about this in a first language. Moreover, the importance of these findings for teaching non-native children is apparent. If we can identify the strategies spontaneously used to remedy communication failures, we would be able to use this information in instructing the bilingual child.

2. Semantics

a. What hypotheses do non-native children make about word meaning? How much of their hypotheses is attributable to their cognitive development? How much is due to language specific hypotheses? The interaction between language and cognition is complex in first language acquisition. The nature of this relationship in child second language acquisition is far less well-known.

b. How does the extension of word meaning take place

in child second languauge learners? What seem to be relevant properties of referents for the non-native child acquiring words? Our findings here should suggest the manner in which lexical items ought to be presented to the non-native child.

c. What non-linguistic strategies are relevant for first and second (child) language learners? Research on this question in native language acquisition is fairly recent. It should provide insights that could be particularly helpful to a non-native child struggling with the complexities of a new language.

3. Input

a. What effect does input have on the non-native child's speech development? Are certain input forms and styles more facilitative of language development? Information gained here may be particularly useful in training future teachers in bilingual education.

b. How do speaker's modify their speech to children across language acquisition? There is evidence (Shatz and Gelman, 1973; Gelman, Note 10) that speakers do modify their productions differentially as a child develops linguistically. Further investigation may suggest alternate linguistic styles to teachers of bilingual education depending on the linguistic development of the child.

4. Acquisition in older children

As indicated earlier, there is little research on the acquisition of speech in elementary school age children. Since this is the age of children in bilingual education programs, re-

search in the aforementioned areas in older children seems not only appropriate but necessary.

Our present direction in the study of children's language is toward a view of language in context. Concern with the form of children's utterances has decreased to the extent that it is viewed as a function of what is being said. Hopefully, a similar position will be taken with regard to the problems of the bilingual child. If we are to be concerned with facilitating the child's communicative competence, then we ought to address questions that provide clues to how bilingual children learn how to mean.

FOOTNOTES

[1]Beobachtungen uber die Entwickelung der Seelenfahigkeiten bei Kindern. Translated by Carl Murchison and Suzanne Langer "Tiedemann's observations on the Development of the Mental Faculties of Children." Journal of Genetic Psychology, 1927, 34: 205-230.

[2]See Menyuk (1969) for further discussion of the view that repetition is frequently not imitation. Also see Keller-Cohen and Gracey (1976) for a further discussion of issues surrounding repetition.

[2b]See Bruner (1975) for a discussion of grounds for attributing continuity to different stages of development.

[3]I am using the total number of direct request (which includes ill-formed requests - those directed to self, to toys, and those not heard by the addressee) rather than the total number of well-formed direct requests (excluding ill-formed requests) since the other studies of requests do not report exclusion of ill-formed requests.

[4]Two recent articles on directives from Ervin-Tripp and Mitchell-Kernan Child Discourse, arrived too late to be included. Ervin-Tripp "wait for me rollerskate; Mitchell-Kernan and Kernan and Functional Considerations in the choice of directive forms by Black American Children.

[4b]Garvey may not agree with my interpretation since she argues that the younger children exhibit knowledge of the sincerity conditions for indirect requests in other domains of discourse.

[5]See Chomsky (1965, McNeill (1966) and Bowerman (in press) for views on innateness.

[6]The investigations cited in this paragraph while arguing against syntactic explanations, do not necessarily argue for semantic explanations. Their positions critical of syntactic interpretation is the reason for mentioning them here.

[7]Parisi (1974:98) criticizes the notion of I-markers. "An approach to child language which fails to distinguish between what a child means and what he manages to express seems destined to capture very little of child language, and of its development.

[8]See Nelson (1974:273-4) for her views on the limitations of Piagetian theory in explaining certain aspects of concept and language development.

[9]The subjects ages were not specified.

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DISCUSSION OF DEBORAH KELLER-COHEN'S PAPER

Bernard Spolsky

The relation between applied and theoretical research is a complex one. At times, those working in the applied areas come to the theorists for help with defined problems: at others, the theorists offer their findings as solutions to existing or nonexisting applied problems. One of the most noteworthy, and in the opinion of many, regrettable, examples of the latter was the development by structural linguists of their solution to the foreign language teaching problem. They proposed that their model of language and their discovery procedures should form the base not just for a linguist investigating a new language but also for a student learning a foreign language. A generation of highschool students suffered for their zeal.

This symposium is more cautious, for it does not invite theoretical linguists to solve the problems of bilingual education. Rather, it asks them to outline the most significant trends in their work and then permit some of us a little closer to the applied field to discuss and consider possible applications. In this spirit, I will try to set out the problems of bilingual education that might reasonably expect some clarification from studies in child language acquisition, and ask how useful Dr. Keller-Cohen's admirable survey in dealing with them.

Let me start by reminding you that there are a good number of questions concerning bilingual education that linguistics will have little or nothing to say about. These are the questions, as Professor Shuy pointed out in his opening remarks, concerned with the political, socio-

logical, economic, religious, cultural, psychological, legal, and educational factors that are causes, effects, or goals of bilingual education programs. The linguist, as a linguist, is an expert in only a small part of bilingual education, although, because of the centrality of language to most human and social affairs, the linguist's expertise ranges more widely than others. Secondly, let me recall the complexity of bilingual education situations and programs, with a myriad of possible combinations on all levels. On the sociolinguistic dimension for instance, possible goals range from language revival to language shift.

To focus on the present topic. Those working with bilingual education have a number of questions to which they might expect some sort of answer from research in the area of developmental psycholinguistics. Among these are:

1) How should one characterize bilingualism? What does it mean to know more than one language? This question is obviously related to the more general question of "what does it mean to know a language?", a sphere where language theory and language testing practice share a common concern. The recent work discussed by Dr. Keller-Cohen helps refine this question: the deeper study of pragmatics and semantics permits an even more sophisticated model than that proposed by Cooper in 1967.

2) How do you characterize an individual's bilingualism? Administrators, parents, politicians, and now judges are all getting involved in making decisions that depend on the existence of an answer to the question of identifying a student's primary language and diagnosing student needs, to use the Lau case terms. The work outlined by Dr. Keller-Cohen offers a richer model for such description, but is unfortunately still based on such small samples as to give some misleading answers. To

get more valid answers, we will need the promised evidence from study of variation and variability. Here, one must refer to the current work in phonology that Professor Keller-Cohen did not manage to deal with. The recent paper by Ferguson and Farwell is a case in point: it's implications for handling both variability with an individual and between individuals are of fundamental importance to anyone concerned with language education in general and language testing in particular.

3) How does bilingualism develop? Or rather, how do the various kinds of bilingualism develop? It is encouraging to find that a number of researchers in child language acquisition, following the classic example set by Leopold, continue to look at bilingual children. The work and studying child second language acquisition is clearly basic here, and Dr. Keller-Cohen's discussion most valuable.

4) What effect does bilingualism have on cognitive abilities? The work in semantics and lexicon that Dr. Keller-Cohen refers to promises ultimately to throw further light on the basic question about relations between language and thought raised by Vygotsky. It does not yet suggest how to deal with the question of whether or not it's good psychologically or cognitively to be bilingual.

5) How do you make someone bilingual, or better, how do you help someone to become bilingual? Here, we are face to face with the central concern of the language teacher: how to control curriculum, teaching methods, and environment to make it possible for students to learn a second language. There is, in the research that Dr. Keller-Cohen described, little light yet on this question: a few useful hints that those who have been talking for a decade or so about meaningful language learning practice will find sympathy and possibly clarification

from those studying pragmatics and the effect of input. I am a little nervous that we might soon be hearing about developmental psycholinguistic drills, or pragmatic pattern practices, but we can hope that language teachers can continue to survive the occasional incursions of linguistic theory.

In all, the work in developmental psycholinguistics, whether the newer trends that Dr. Keller-Cohen has described for us, or the more established work in phonology, morphology, and syntax which is now reaching greater levels of sophistication, will give greater understanding of the nature of bilingualism and its implications should be of much use to those working in the field of bilingual education.

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WILDER PENFIELD'S VIEWS ON BILINGUAL EDUCATION*

William Orr Dingwall
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*A commentary on the paper: Bilingualism and Neurolinguistics by H. A. Whitaker presented at the N.I.E. Bilingual Symposium: Building a Research Agenda on Dec. 27, 1975 in San Francisco, CA.

There is one rather surprising and important lacuna in Professor Whitaker's paper, viz., the omission of any reference to Wilder Penfield. This famous neurosurgeon, who surely must be counted among the founders of neurolinguistics, was deeply interested in the topic of this Symposium and returned to it several times in his writings (1953, 1959, 1964 and 1965). Penfield's views are, in my opinion, essentially correct and are, in general, supported by research findings during the ten years that have elapsed since his last publication on bilingual education. I therefore plan to utilize the short time allotted me to review Penfield's thoughts contrasting them with those of Professor Whitaker and supplementing them with the results of recent research. These comments seem best organized under three rubrics: (A) Localization of function in the mature brain, (B) The optimal period for language acquisition and (C) Bilingualism and cognition.

(A) Localization of function in the mature brain.

Penfield's views on localization derived from many years of clinical-experimental research employing such techniques as pharmacological deactivation, electrical stimulation and, of course, surgical excision (Penfield and Rasmussen 1950, Penfield and Roberts 1959). He holds that speech and language involve two basic mechanisms: an inborn motor articulation mechanism which is bilaterally represented in the Rolandic and superior frontal areas of the cortex and an ideational mechanism which mediates the acquired elements of language. This latter mechanism, which Penfield felt was lateralized, consists of the 'classical' anterior and posterior language areas mentioned in Dr. Whitaker's presentation plus part of the superior frontal area. The posterior area is the major language area; the anterior and superior frontal areas are secondary in that adult patients can recover speech when either one is destroyed. In general, I think there is considerable support for this scheme (cf. Luria 1973, Mohr 1973, Dingwall and Whitaker 1974, Whitaker and Selnes 1975), although we now know that the minor hemisphere has a far greater speech and language capacity than previously thought (Moscovitch 1973, Levy 1974 and Zaidel 1973). Penfield hypothesized further that co-ordination of these ideational speech areas was carried out by a sub-cortical (centrencephalic) system involving parts of the thalamus. This idea is also generally supported by recent research (Ojemann 1975). Finally,

those areas of the temporal lobes not utilized for speech and language are usually involved in memory processes. Again we have evidence that such an interpretive cortex, as Penfield called it, exists (Fedio and Van Buren 1974) and that for normal memory processes integration of information from both hemispheres is required (Sperry 1974). (Figures I and II summarize the speech areas discussed.)

When considering localization of function, it is well to remember that the brain is under no requirement to parcel itself out in accord with functions for which any natural language supplies terms. On the one hand, there may be no cover-term that will encompass the multitude of functions carried out by the dominant or minor hemispheres; on the other hand, functions which our language may lead us to believe are unitary, such as speech or writing, are not units in terms of brain function. The languages of the brain and the languages of man are different.

In discussing bilingualism, Penfield states emphatically that there is no basis for the supposition that one anatomical area of the brain is used for one language and a separate area for another. He points out that after 30 years of practice in Montreal, he has never examined a bilingual aphasic who was not equally deficient in both of his languages (Penfield 1959, p. 221). An unselected study of 10 bilingual and polyglot patients by Charlton (1964) supports this view. The Paradis study cited by Professor Whitaker may be suspect because of its necessarily selective character and because of the lack of control over testing procedures.

Finally, the acquisition of several languages is evidently not dependant on brain size. Seckel notes that several nanacephalic dwarves picked up the elements of two or three languages on their world travels (1960, p. 240).

(B) The optimal period for language acquisition.

As noted above, Penfield regarded certain parts of the cortex as functionally committed from birth, notably the sensory and motor cortices; other parts of the cortex including the ideational speech and language areas, he held to be uncommitted. His view appears not unlike that put forth recently by the neurobiologist, Marcus Jacobson, who claims that "language development is correlated with the increase in connections in the cerebral cortex and especially with the growth and connectivity of stellate and granule cells (Type II neurons)" (Jacobson, 1975). Penfield felt that around 10 to 14 years of age, the general functional connections for language had been laid down. He recommended that bilingual language learning

begin before 6 to 8 years of age, that it be imparted by what he termed the 'mother's method' (i.e., through experience rather than instruction) and that, at least in the beginning, the languages be learned in separate milieux (e.g., French from the mother, English from the father; French upstairs, English downstairs) so as not to confuse the child.

Current research clearly supports the view that there exists what ethologists term an optimal (as opposed to critical) period for language learning (cf. Hess 1973, pp. 56 ff. as well as Dingwall 1975). Whether this period is optimal solely for native-like speech production or extends to all modalities and aspects of language is, I think, still unresolved (cf. Krashen 1975, Omaya 1973, Asher and Price 1967, Asher and García 1969).

Finally, Penfield felt that early experience with a second language conditions the uncommitted cortex for further language learning later in life. I know of anecdotal support for this (cf. Hill 1970) but of no hard and fast research findings on this question.

The relationship between the establishment of cerebral dominance and normal language acquisition is far from clear (cf. Krashen 1973 and 1975). While some investigators believe that cerebral dominance is established at birth (Kinsbourne 1975), others hold that both inter- and intra-hemispheric specialization is a gradual process extending perhaps over one's entire lifetime (cf. Brown and Jaffe 1975 and Brown 1975). Penfield as well as most other researchers holds that completely successful transfer of speech and language function to the non-dominant hemisphere is possible under four years of age (for a review of the literature on this cf. Smith 1974). Dennis and Whitaker's findings to the contrary are therefore most intriguing. As I have not seen their study I cannot comment further but, for what it's worth, it might be noted that Zaidel's careful study of dominant hemispherectomy at the age of 10 does accord with the deficit profile that Professor Whitaker notes in his cases of hemispherectomy performed prior to 4½ months of age.

(C) Bilingualism and cognition.

Penfield was at pains to point out that bilingual education "endows the child with a more efficient and useful brain (1965, p. 82-3)." Had there not been initial findings to the contrary, surely no one would have doubted what now is amply attested, viz., that an enriched environment is bound to have positive psychological and, indeed,

physiological effects on the brain (cf. Lambert 1972 and Rose 1972). These findings, of course, may fail to generalize when social conditions fail to conform to those under which these studies were conducted.

Finally, Penfield speculates that the bilingual possesees a switch mechanism which allows him to move from language to language without confusion, translation or accent. Psychological experimentation fails to support this view either on the decoding side where all languages seem to be rapidly and effortlessly stored in some form of language-independent 'mentalese' or on the encoding side where effortful shifting of gears accompanied by interfere n ce appears to be the norm (Macnamara 1967).

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FIGURE 1. The motor articulation mechanism, the ideational mechanism, and the interpretive cortex in the dominant hemisphere.

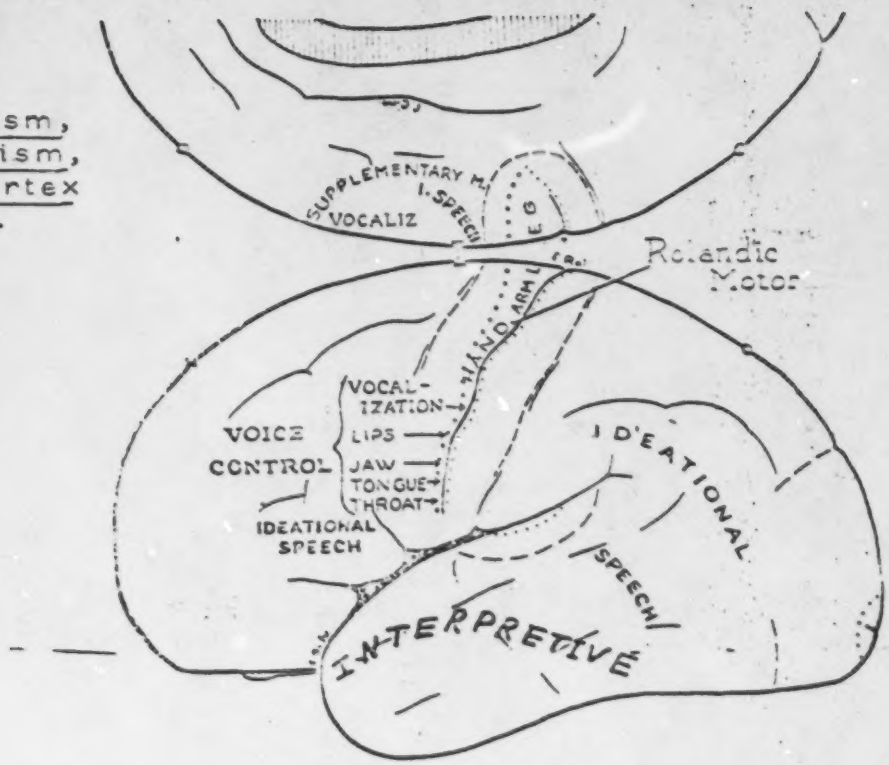
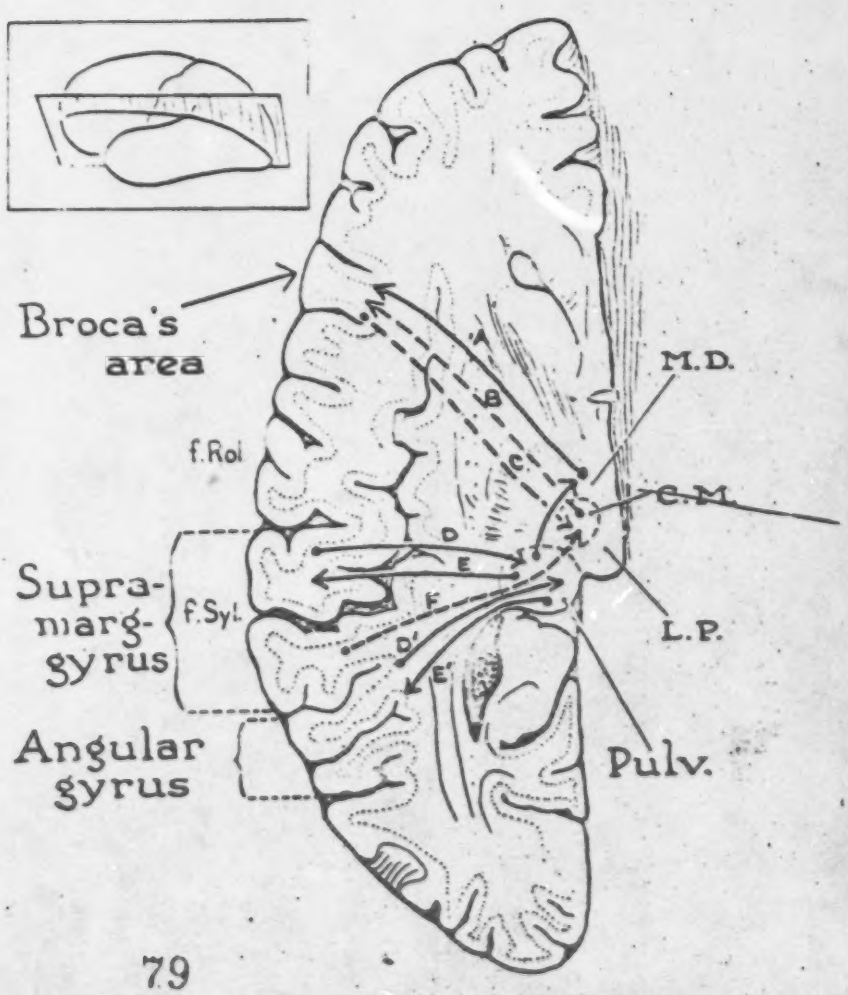


FIGURE 2. The sub-cortical (centrencephalic) system showing projections from the anterior and posterior ideational language areas to parts of the thalamus. M.D. - medial dorsal nucleus, C.M. - centrum medianum, L.P. - lateral posterior nucleus, Pulv. - pulvinar.



SPECIAL PROBLEMS IN LANGUAGE DEVELOPMENT:

THE LANGUAGE IMPAIRED CHILD AND BILINGUAL EDUCATION

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Boston University
December, 1975

Introduction

We will be focusing on the intersection of two areas: the first, children whose special problem arises from what appears to be an inadequacy in their language ability; and the second, children whose special problem arises from the necessity to learn another (usually but not necessarily a second) language. Each of these areas has provided and continues to provide a formidable challenge to an educational system. The challenge of dealing with the education of children who have both language problems and the problems of learning a new language becomes, at least for some, overwhelming. As one Boston teacher working with Spanish--speaking children recently confided "Look, we can barely cope with the problems of working with normal children, keeping them in school, encouraging them to learn subjects and English; and now you want to make things worse by telling us that some of these kids have problems we didn't know about."

The task of this paper is to address the following two questions: What do we know about the language development and language use of the language-impaired child that is relevant to bilingual education? What new research appears to be most relevant to improving the education of the language-impaired child in the bilingual education environment? We will address the first question by a series of specific questions and their discussion which,

in turn, will suggest relevant research. Our discussion throughout will focus almost entirely on language and will not deal, except indirectly, with other related topics such as cognitive processing, cultural differences, or effects of social and economic position. In addition, we will not be addressing at all the issue of what type of bilingual educational program might be best for the language-impaired child (since such policy decisions involve factors going well beyond the understanding of the language issue itself) the ethics of intervention nor, whether or not bilingual education is itself a desirable or effective educational process for these, or, for that matter, any children.

Interesting as these issues are, they fall well beyond the scope of our examination.

The paper is divided into the following sections:

A. What is a language-impaired child?

B. What do we know about the language development of the language-impaired child?

C. What means do we have for assessing the language ability of a given language-impaired child?

D. What do we know about the way in which a language-impaired child acquires a second language?

Our approach to answering questions B, C, and D will be to first ask the same question about the normal child; for example, what do we know about the language of the normal child? Following these questions and the discussion we present our proposals for research.

A. What is a language-impaired child?

Even after posing this question one hesitates to attempt an answer for, like most definitions, particularly labels given to disabilities, it is bound to be both too weak and too strong. However, the following is at least an approximation to an answer: a language-impaired child is one whose language ability is not developing normally and who does not evidence any other relevant disability.

Let us now attempt to clarify this definition. First, when we speak of language impairment, we are concerned with language ability--a cognitive ability--rather than with either hearing or speech capabilities. A deaf child is not, because of the deafness, a language-impaired child; nor is the child with a deviated septum or laryngenal polyps necessarily language-impaired.

Second, we do not include in this definition those children whose language problems demonstrably stem from either congenital defects (for example, mental retardation arising from Downs Syndrome) nor from neurological lesions or trauma which result in aphasia. (We might note here that the language-impaired children of whom we are speaking have occasionally been called "child-aphasics" or children with "minimal brain damage"--so minimal that it can't be detected.) Nor do we intend to include under the definition those children whose emotional condition leads to a lack of language use (for example, the so-called "autistic child").

Already the definition is breaking down since one can properly argue that we have not provided any way to distinguish between the language problems of a child who is slightly mentally retarded and one who is what we are calling language-impaired. Indeed we have not, since this would require yet another definition, that of mental retardation. To avoid such an endless and fruitless series of qualifying definition, we propose to include under the term language-impaired only those who demonstrate a normal ability on the performance IQ tests.

Third, it is not the case that every language-impaired child is immediately obvious on presentation. Many such children experience what seems to be a perfectly normal childhood, and it is only upon entering school that their language difficulties become manifest. At this point they are faced with certain language performance tasks such as reading or mathematics and it is

often here that there is something not normal about the child's language abilities. Up to this point, the child may have compensated quite adequately for the language difficulty, for example, by choosing several short sentences in a conversation rather than using a long, relatively complicated structure. (Recently we discovered quite by accident a third year transfer student at Boston University who was clearly language-impaired but who had managed to arrive at her Junior year in college through elaborate compensatory measures of which she was very much aware and a "little help from her friends.") Such students are usually labeled "learning disabled" though this label applies as well to students whose difficulties are other than language-based. Again, we must beg off attempting to define the L.D. child for reasons of time and sanity.

To summarize, we are characterizing the language-impaired child to be one who appears to have normal intelligence, no relevant physical, neurological or emotional difficulties, but a child whose language abilities are not normal.

But here again, one might quite reasonably argue that we have included under this characterization those children whose language is simply delayed. Such well-known persons as Thomas Edison and the British historian MacCauley (if the stories about them are to be believed) would have been among the language-impaired. Indeed, we do not intend to include the child who simply starts a little late to develop language to be among the language-impaired. But here, then, is an important question: when does language delay language constitute impairment? A child of three, for example; who talks in two word utterances (e.g. "Mommy go", "Want more") might be viewed as a normal, albeit delayed language learner; the same language performance by the child

of 10 would surely be taken as constituting a serious language problem. At what age delay becomes a problem is not known at this point, if, in fact, there is ever a break-point rather than a continuum.

Related is the question of when language difference becomes language deviance. Recent controversy concerning various English dialects, most notably the differences between Standard English and Black English, has highlighted the fact that difference does not necessarily constitute deviance. Here again, it is difficult to establish any reasonable guidelines. A child of 5 years, for example, who says "turch" instead of "church" is different from most of his peers who have mastered initial "ch" but probably not "deviant" in his language development. But a similar child who says "lurch" instead of "church" might well be viewed as evidencing deviant language development.

We see, then, that these issues of difference, deviance, and delay permeate any consideration of the assessment of a child with language problems: Are the language problems for this child due to a difference in language (perhaps dialect difference), are they due simply to a delay in the development process, or are they due to some basic inadequacy in language ability? If the latter, we are then dealing with the language-impaired child.

It should be clear now that to address the question "What is a language--impaired child?" poses about as many questions as it answers. We have, intuitively, the idea that such a child is normal except that something about the language is not right; in some cases, quite a lot is not right. But there is at present no set of necessary and sufficient conditions for deciding whether or not some individual child should be considered as language-impaired. Nevertheless, we shall proceed in addressing the other questions and proposing relevant research as if we could precisely identify these children.

Given the relatively large number who presumably fall into this category without contest, there seems good reason not to wait for a more carefully formulated definition before getting on with the problem of what to do about the problems in a bilingual setting.

B. What do we know about the language development of the language-impaired child?

The direct, and unfortunate, answer to this question is the following: very little. While there has been a great deal of work studying the language development of normal children (See the report of D. Keller-Cohen, this volume), very little has been done in a systematic way with language-impaired children. Before reviewing what results do exist, however, I would like to indicate how one might anticipate the results of such studies could be presented. We will use normal, first-language acquisition research results for the example.

Underlying our presentation is the assumption that one can seriously examine the development of language in a child by studying at least four main areas of linguistic development: phonological, morphological, syntactic, and semantic. These four areas develop in parallel, are surely interrelated in ways that we have not even begun to suspect, but each can, nevertheless, be focused upon to the exclusion of the other three. In doing so, one hopefully can determine the pattern of acquisition within each of the areas.

It is my belief that the most useful way to present the research results from investigations into one of these areas is not in the usual annotated bibliography or topic review of the literature. These simply do not summarize in a useful way what is not known about the area. What appears more useful is the presentation of the research data in the form of a profile to portray

visually what is known. The idea of a profile is to display the results in graphical form: Using phonological acquisition as our example, we assign to the y-axis the particular language feature to be acquired (e.g., /p/,/t/, /a/,...); to the x-axis, a time scale. For each feature, the time of first occurrence as reported in the literature would be indicated, the time at which the "average" child has been found to acquire the feature, and the time after which nearly all children have been found to have the feature. Thus, each profile will resemble a series of horizontal parallel lines such that, by picking a time within that represented on the x-axis time scale, one can move vertically and determine for each of the features on the y-axis whether they can be expected to occur at all, usually, or always for that time period. Profile 1 illustrates this approach for phonological acquisition of English (the literature on which this profile is based is listed in Appendix A).

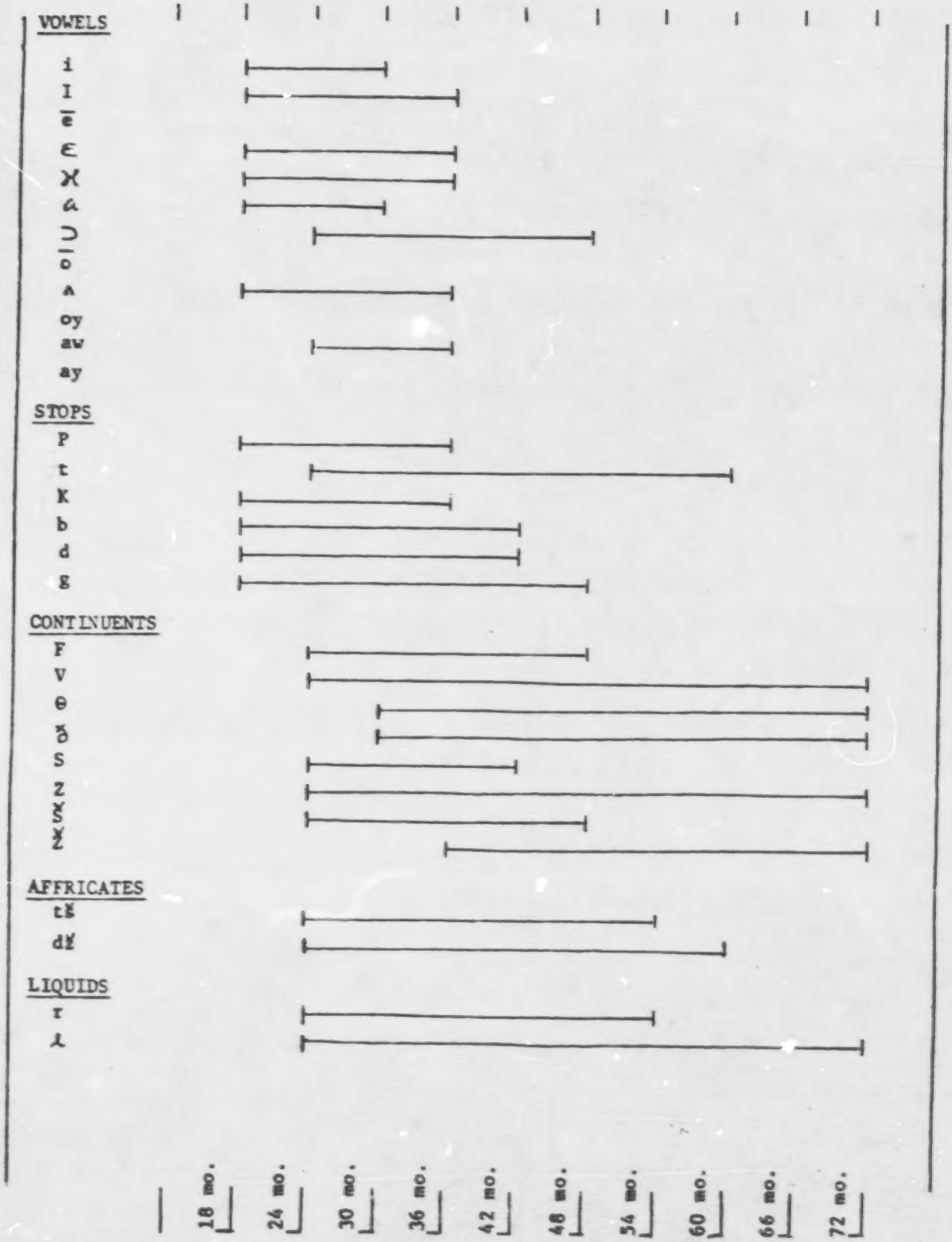
(Insert Profile 1 here)

We have attempted to construct such profiles based on the published and unpublished research results for normal first language acquisition in English-speaking children. What we found, once we began to chart the research data in these areas was that for phonology and morphology there is enough data to construct a useful profile. For syntax and semantics, not only is there much less data (contrary to most views about research in language acquisition), it is often contradictory and/or without suffiecient detail and precision to permit a reliable profile.

This attempt to develop and construct these language acquisition profiles also forced us to a rather discouraging conclusion, one not obvious from a usual overview of the literature: since the elicitation techniques vary so greatly, since there are such diverse methods of scoring a correct/acquired feature, and since the time of observation and number of subjects involved differed so greatly from researcher to researcher and since the experience of researchers ranged so widely, one must be extremely careful about drawing any conclusions about what features the "average,

PROFILE I NORMAL CHILDREN: PHONOLOGICAL DEVELOPMENT

(Unless indicated, each time line represents the phoneme in initial, final, and medial position)



PROFILE 1 (b)

NASALS
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GLIDES
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CLUSTERS
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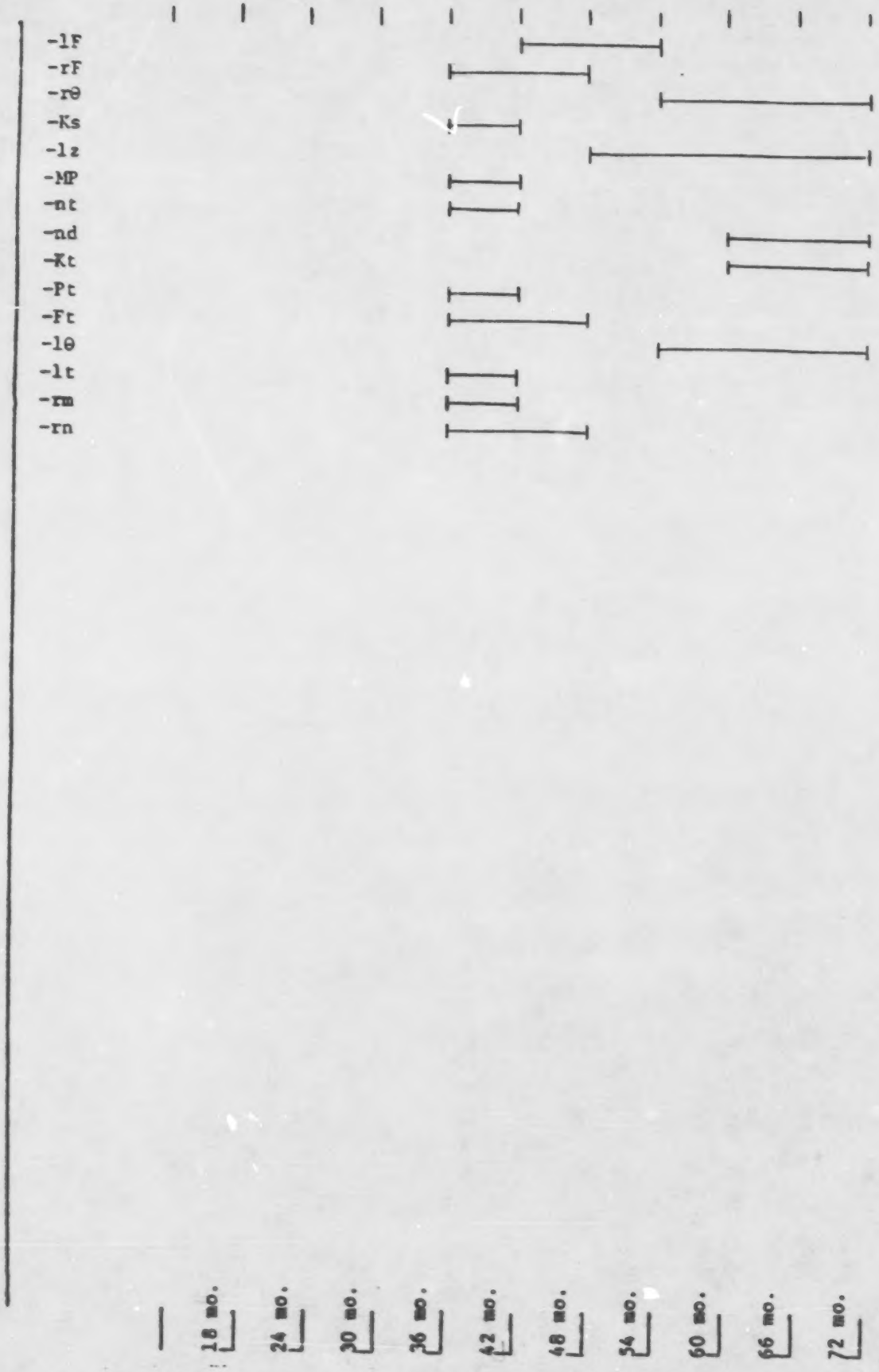
pr-
tr-
tw-
kl-
kr-
kw-
bl-
br-
dr-
gl-
gr-
Fl-
Fr-
θr
Sr
Šr-
SL-
SM-
SN-
SP
St
Sw-
-lP
-rP
-rt
-lk
-rk
-lb
-rb
-rd
-rg
16 mo.
24 mo.
30 mo.
36 mo.
42 mo.
48 mo.
54 mo.
60 mo.
66 mo.
72 mo.

PROFILE 1 (c)


-lF
-rF
-rθ
-Ks
-lz
-MP
-nt
-nd
-Kt
-Pt
-Ft
-lθ
-lt
-rm
-rn
18 mo.
24 mo.
30 mo.
36 mo.
42 mo.
48 mo.
54 mo.
60 mo.
66 mo.
72 mo.

normal child" can be expected to have at any given time.

When we turn to the literature on the language-impaired child, we find less than 20 articles which specifically address the issue of language acquisition. To be sure, there are many articles which deal with the relationship between cognition and language, and many dealing with those problems in a readings, writing, and mathematics for the language-impaired (there called a learning disabled) child. But the following bibliography indicates those articles we are aware of which provide data which might be useful in constructing a profile of language development for language-impaired children.

Bibliography on Language Acquisition of Language-Impaired Children

Phonology

Farwell, C. 1972. "A note on the production of fricatives in linguistically deviant children." Papers and Reports on Child Language Development, Committee on Linguistics, Stanford University.

Menyuk, P. and Looney, P. L. 1972. "Relationships among components of the grammar in language disorder." Journal of Speech and Hearing Research. 15(2): 395-406.

Rosenthal, W. S. 1972. "Auditory and linguistic interaction in developmental aphasia: evidence from two studies of auditory processing." Papers and Reports on Child Language Development, Committee on Linguistics, Stanford University.

Stark, J., Poppen, R., and May, M. 1967. "Effects of alterations of prosodic features on the sequencing performance of aphasic children." Journal of Speech and Hearing Research. 10: 849-855.

McReynolds, L. V. 1966. "Operant conditioning for investigating speech sound discrimination in aphasic children." Journal of Speech and Hearing Research. 9: 519-528.

Lowe, A. D. and Campbell, R. A. 1965. "Temporal discrimination in aphasoid and normal children." Journal of Speech and Hearing Research. 8: 313-134.

Tallal, P. 1974. "Developmental dysphasia: a defect of perception, not language?" Paper presented at the 87th meeting of the Acoustical Society of America.

Tallal, P. and Piercy, M. 1973. "Developmental dysphasia: impaired rate of non-verbal processing as a function of sensory modality." Neuropsychologia. 11(4): 389-398.

_____. 1974. "Developmental aphasia: rate of auditory processing and selective impairment of consonant perception." Neuropsychologia. 12: 83-93.

Morphology

Ingram, D. 1972. "The acquisition of the English verbal auxiliary and copula in normal and linguistically deviant children." Papers and Reports on Child Language Development, Committee on Linguistics, Stanford University.

Johnston, J. & T. Sherry 1974. "The use of grammatical morphemes by children with communication disorders" (In preparation).

Syntax

Ingram, D. 1972. "The acqusition of questions and its relation to cognitive development in normal and linguistically deviant children: a pilot study." Papers and Reports on Child Language Development, Committee on Linguistics, Stanford University.

Leonard, L. B. 1972. "What is deviant language?" Journal of Speech and Hearing Disorders. 37: 427-446.

Levy, C. B. and Menyuk, P. 1974. "Relation between certain cognitive skills and sentence comprehension in children." Paper presented at American Speech and Hearing Association Convention, Las Vegas.

Menyuk, P. and P. Looney. 1972. "A problem of language disorder: length vs. structure." Journal of Speech and Hearing Research. 15: 264-279.

Morehead, D. M. and D, Ingram. 1973. "The development of base syntax in normal and linguistically deviant children." Journal of Speech and Hearing Research. 16(3): 330-352.

Semel, H. & E. Wiig. 1975. "Comprehension of syntactical structures and critical verbal elements used by learning disabled children." JLD: 12.

Walsh, M. 1975. "A study of question production differences in the language of learning disabled children when compared with normal children." M.S. Thesis, Boston University.

Semantics

Morehead, D. 1972. "Early grammatical and semantic relations: some implications for a general representational deficit in linguistically deviant children." Papers and Reports on Child Language Development, Committee on Linguistics, Stanford University.

Webster, B. O. and Ingram, D. 1972. "The comprehension and production of the anaphoric pronouns "HE, SHE, HIM, HER" in normal and linguistically deviant children: a preliminary report." Papers and Reports on Child Language Development, Committee on Linguistics, Stanford University.

General Summary

Morehead, D. 1975. "The study of linguistically deficient children" In S. Singh (ed.) Measurement in hearing, speech and language. University Park Press.

More discouraging is the fact that most of the language research articles do not provide the sort of data that is required to say anything systematic about the language acquisition. Seldom is the data presented (or was it collected) in a way that would permit us to develop a statement of developmental order, and it is usually presented as group trends rather than individual. Consequently, one can not develop profiles for the non-normal acquisition by areas. The best we can do at present is to treat the entire issue in an expository fashion and touch on the most important acquisitional points.

The development of language in language-impaired or aphasic children is characterized by delay and lower frequency of occurrence: delay in acquisition of linguistic input, and a lower frequency of occurrence of various linguistic items, as well as of actual utterances. As Morehead (1975) has written:

> We now have considerable evidence in both language and cognition that deficient children do not organize these systems in ways that are fundamentally different from those used by normal children. This general finding suggest, to me at least, that new research should focus on the acquisition process rather than on the organization of linguistic systems. (page 60)

Delay is a primary feature of aphasic phonological development. Lowe and Campbell (1965) found that aphasic children need longer latencies between pulse onsets of two tones to order them (for pitch) or to perceive them as two separate sounds. They suggest that temporal ordering malfunction may account for deficient perception of phonemes and other linguistic sequences. McReynolds (1966) found that an aphasic child requires more time (i.e. more trials) to respond reliably to a discrimination between speech sounds. If given an insufficient amount of time an aphasic child will respond erroneously and would appear to be impaired in auditory discrimination ability. The temporal difficulty encountered by aphasic children in ordering stimuli was noted by Rosenthal (1972). Aphasic children had difficulty ordering stimuli (consonants) differentiated on the basis of temporally ordered distinctions (e.g. /s/ and /ts/). Stimuli with identical duration and rise times but with different spectral features (e.g. /s/ and /s/) were easier to order. A reverse effect was found for normal children. Similar phenomena were noted by Tallel and Piercy (1973) who found that the duration of stimuli events (i.e. time available for auditory processing) affects perception and that brief duration of formant transitions for some consonant stimuli (e.g. /ba/, /da/) may account for aphasic children's inability to discriminate (1974). There were three tasks involved in Tallel & Piercy (1974): repetition, perception with sequential motor response, and same-different two-way distinction. A consonantal profile for aphasic children can be plotted from production data resulting from responses to pictures (Farwell, 1972).

Menyuk and Looney (1972) compiled error percentages and rank order of feature maintenance in nine subjects with a mean chronological age of 6;2. Aphasic

children also experience temporal difficulties with length of utterance. Stark, Poppen, and May (1967) found that aphasic children have difficulty repeating three-word sequences due to their forgetting the first item. When the first item is stressed, recall of the entire utterance is enhanced; however, when other items are stressed recall tends to be disrupted.

The morphological development of aphasic children has not been as widely examined. Ingram (1972) compiled a morphological profile, but is summarizes group results, not the individual pattern of acquisition.

Delay in the syntactic development of aphasic children was observed by Morehead and Ingram (1973) who found the onset time for base syntax or two-word utterances in language-deviant children to be delayed by as much as 3½ years. Acquisition time from levels I-V was nearly 2½ times longer for language deviant children than for normal children. Lower frequency of usage in 5-year old language-disordered children was observed by Leonard (1972). He concluded that the difference in syntactic structure between normal and language disordered children is best described in terms of frequency of usage and not in terms of actual acquisition. Aphasic children's performance on initiation tasks was reported by Menyuk and Looney (1972), and their performance on comprehension tasks by Levy and Menyuk (1974).

Semantic development in aphasic children can also be characterized by lower frequency of usage. Morehead (1972) found that despite normal and language deviant children's similar phrase structure rules and frequently occurring transformations, the deviant children did not use major linguistic categories (e.g. noun, verb, noun-object) in as many different contexts or syntactic frames as did normal children. Webster and Ingram (1972) examined the production data (i.e. responses to requests to describe manipulation of toy dolls by the experimenter).

C. What means do we have for assessing the language ability of a given language-impaired child?

Here again, the answer is the same: very little.

At the risk of oversimplification, we can divide these language tests up into two types: achievement tests; and analysis tests. The former type, for example the verbal parts of the WISC or Stanford-Binet, provide a number which, when interpreted, indicates how a child compares in certain abilities against a norm. Such assessment instruments may serve adequately for adult populations or for the assessment of normal children's language, but they clearly do not provide us with requisite information about the language development of the language-impaired child. What we need for these children is an assessment of what language abilities they do and do not have at a given time. This is particularly important within the context of the child learning a second language as well.

We do not lack attempts to construct such language assessment instruments. In recent survey of what is presently available we examined approximately 100 published and unpublished measures designed to provide an analysis of the state of language development in a child. In each case we found shortcomings, some more serious than other, but in no case could we view the instrument as comprehensive, or adequate for one area of the child's language development. For example, the Assessment of Children's Language Comprehension (ACLC) assesses only receptive language ability and ignores phonological and nearly all semantic aspects. The Berry Exploratory Test of Grammar tests only expressive language and then, only expressive morphology and only by using one elicitation device. The Northwestern Syntax Screening Tests tests only the areas of morphology and syntax and then, only on a limited scale. And so on through each of the instruments. Moreover, each of the instruments suffers from a variety of difficulties with their data

sampling techniques; for example, the ACLC uses only picture identification, no toys or other familiar objects are used, and the pictures themselves seem to have little appeal for the children.

We are aware, however, of one on-going effort headed by Prof. Janice Laine, School of Education, UCLA, to develop a comprehensive language assessment instrument for normal and language-impaired children. The instrument, already well under development is called CLAM (Children's Language Assessment Measure) and from the recent material on their work, the result will surely raise the level of analytical language assessment an order of magnitude above its present level.

Given that CLAM will still be several years in the development and refining, it is worth indicating some of the existing instruments now available and their areas of focus. This we have done below. recognizing that some instruments deal with more than one area and without indicating either the virtues or defects of any of them.

Summary of Language Assessment Instruments

General Instruments	1. Houston Test for Language Development (Crabtree, 1963) 2. Illinois Test of Psychologuistics Abilities (Kirk, McCarthy and Kirk, 1968) 3. Receptive-Expressive Emergent Language (Bzoch & League, 1971) 4. Utah Test of Language Development (Mecham, Jex and Jones, 1967)	
	PRODUCTION	COMPREHENSION
PHONOLOGY	1. Developmental Articulation Test (Hejna, 1955) 2. Goldman-Fristoe Articulation Test (Goldman-Fristoe, 1966) 3. Deep Test of Articulation (1966) 4. Templin-Darley Articulation Test (Templin-Darley, 1960) 5. Phonetic analysis of speech sample (Weber, 1970; McReynolds & Houston, 1971) 6. Photo Articulation Test (Pendergast, et.al., 1969)	1. Auditory Discrimination Test (Wepman, 1958) 2. Children's Auditory Discrimination Inventory (Stern, 1968) 3. Templin's Discrimination Test (Templin, 1967) 4. Test of Auditory Discrimination (Goldman-Fristoe-Woodcock, 1970) 5. Schuell's Discrimination Test (Schuell, 1965) 6. Picture Speech Discrimination Test (Mecham and Jex, 1962) 7. Eisenson's Test (Eisenson, 1968) 8. Development Survey (Valett, 1966) 9. STAP (Kimmel & Wahl, 1969)
MORPHOLOGY/ SYNTAX	1. Northestern Syntax Screening (Lee, 1969) 2. Test of English Morphology ((Berko, 1958) 3. Exploratory Test of Grammar (Berry-Talbot, 1966) 4. Grammatic Closure subtest ITPA (Kirk, McCarthy and Kirk, 1968) 5. Analysis of speech sample Developmental Sentence Types (Lee, 1969) Developmental Sentence Scoring (Lee & Cantor, 1971)	1. Northwestern Syntax Screening (Lee, 1969) 2. Evaluation of Grammatical Capacity (Menyuk, 1971) 3. Auditory Test for Language Comprehension (Carrow, 1969) 4. Assessments of Children's Language Comprehension (Foster, Giddan & Stark, 1972) 5. Grammatical Comprehension Test (Bellugi & Kilma, 1968)

	PRODUCTION	COMPREHENSION
MORPHOLOGY/ SYNTAX (Continued)	Indiana Scale of Clausal Development (Dever & Bauman, 1971) Linguistic Analysis of Speech Samples (Engler, Hannah & Longhurst, 1973)	

In addition the following are relevant: Ley, 1966; Miner, 1969; Barlow & Miner, 1969; Griffith & Miner, 1969; Lee & Canter, 1971; Dever, 1971; Engler, Hannah & Longhurst, 1973; Longhurst & Schrandt, 1973.

SEMANTICS	1. Michigan Picture Language Inventory Vocabulary Subtest (Wolski, 1962) 2. Byoch & Teague (1970)	1. Michigan Picture Language Inventory Vocabulary Subtest (Wolski, 1962) 2. Full-Range Picture Vocabulary Test (Ammons & Ammons, 1948) 3. Peabody Picture Vocabulary Test (Dunn, 1965) 4. Auditory Reception Subtest ITPA 5. Visual Reception Subtest ITPA 6. Vocabulary and Similarities (WISC) 7. Vocabulary Subtest Stanford-Binet

The following represents a selection of descriptive comments, some drawn from the test instrument material itself, to illustrate the orientation of the available material.

Northwestern Syntax Screening Test (Lee, 1969)

"The NSST is intended to be used as a screening instrument only: it is, in no sense, to be considered a measurement of a child's general language skill nor even as an "in-depth" study of syntax...It will isolate those children between 3 and 8 years of age who are sufficiently delayed in syntactic development to warrant further study."

"The NSST is not intended to be used as a measure of speed of decoding and encoding nor as a test of memory."

"The NSST measures both receptive and expressive use of syntactic forms, using identical linguistic structures in both parts of the test."

Age Norms: 3-0 - 7-11 years
Normative Sample - 242 Children between 3-0 and 7-11 yrs.
spoke standard American English
middle-upper middle income

Berry-Talbot "Exploratory Test of Grammar"

"An exploratory means of studying the ability of a young child to develop rules of grammar, this is a measure we have designed from the research studies of Berko." p. 261

taken from: Berry, M., "Language Disorders of Children", N.Y.: Appleton-Century-Crafts, 1969.

Evaluation of Grammatical Capacity (Menyuk)

On the use of TG for child language: "It was found that the basic structures which generated all the sentences obtained could be described within the framework of the Chomsky model."

Menyuk, P. "Syntactic Structures in the Language of Children," Child Development, Vol. 34, 1963, p. 407-22.

On the use of sentence repetition as a means of assessing competence:

"The differences in the ability of children to repeat the various sentences seems to be dependent on the particular rules used to generate these sentences rather than sentence length. This is shown by the insignificant correltation between length and nonrepetition when normal word order is maintained and the highly significant correlation between length and nonrepetition when the structure is broken down.

This hypothesis of repetition being dependent on structure rather than mere imitation is further strengthened by the kinds of responses one obtains in the repetition of certain structures. The most frequent types of deviation from complete repetition found were modification of transformations and correction of restricted forms. The modifications always took the form of using a set of rules which come earlier in the grammar than those used in the sentence."

Menyuk, P. "A Preliminary Evaluation of Grammatical Capacity in Children", JVLVB, Vol. 2, 1963. p. 429-39.

Developmental Sentence Types (Lee)

"The Developmental Sentence Types present a theoretical construct of early syntactic development in children's language. Beginning with the simplest two-word combinations, this construct traces the gradual emergence of phrase structure rules in children's grammar and the formulation of kernal sentences, from which transformational structures can be derived."

This procedure is meant to point out qualitative differences in the language development of normal and deviant children.

taken from: Lee, L. "Developmental Sentence Types JSHD, Vol. 31, 1966. p. 311-330.

Developmental Sentence Scoring (Lee & Carter, 1971)

"One important clinical tool would be a developmental scale of syntax acquisition, showing the general order in which normal children achieve particular syntactic structures."

"DSS evaluates a child's performance, his use of grammatical rules in spontaneous speech, and measures the child's grammar against adult standard English. A structure is not given a score unless all the required syntactic and morphological rules have been observed."

"DSS should not be considered by clinicians as a test of syntactic or morphological development, but rather as a clinical procedure for analyzing verbal performance and planning appropriate remedial measures."

taken from: Lee, L. & Carter, S. "Developmental Sentence Scoring", JSHD, Vol. 36, 1971. p. 315-40.

Linguistic Analysis of Sppech Samples (Engles, Hannah, & Longhurst, 1973)

"This approach utilizes contrastive analysis and borrowed a combination of concepts from slot-filler (tagnemic), immediate constituent, and elementary transformational grammar approaches of current linguistic theory."

taken from: Longhurst, T. & Schrandt, T. "Linguistic Analysis of Children's Speech: A Comparison of Four Procedures," JSHD, Vol. 38, 1973, p. 240-9.

Assessment of Children's Language Comprehension (Gidden, et. al., 1972

"The ACLC was designed to enable a clinician to determine how many

word classes in different combinations of length and complexity a child would be able to un derstand. It is not a measure of the child's expressive performance and is limited to an assessment of his comprehension in the presence of pictures." p. 5

"Whatever other deficits are part of the profile of the language impaired child, we have consistently found that as a group they have a very poor auditory memory and this is essentially what the ACLC addresses itself to. It attempts to determine the level at which the child is unable to process and remember lexical items in syntactic sequences." p. 14

Age Norms extend from 3-0 - 6-5 yrs.
Normative Sample - 365 Nursery & Kindergarten children
includes a cross section of racial & economic backgrounds
also includes some children who were referred for diagnosis of remediation.

taken from: Gidden, F. R., & Stark, J., "Manual for the Assessment of Children's Language Comprehension," Consulting Psychologists Press, Inc. 1972.

Carrow Test for Auditory Comprehension of Language (Carrow, 1969)

This test is designed to measure comprehension of various syntactic structures by repeating a word, phrase, or sentence to the child and having him point to the correct picture among several possibilities.

Ammons Full-Range Picture Vocabulary Test (Ammons & Ammons, 1948)

The FRPVT measures receptive vocabulary by having the child point to appropriate pictures. It is highly correlated (.849 & 881 for Forms A&B, respectively) with the WAIS Full Scale IQ (Sydiaha, 1967) and is often used as an intelligence measure.

Age Norms - 2-6 yrs. - 16-6 yrs.

Sydiaha, D. "Predictions of WAIS IZ for Psychiatric Patients using the Ammons FRPV and Rauen's Progressive Matrices, Psychological Reports, 1967, Vol. 20, p. 823-26.

Michigan Picture Language Inventory (Wolski, 1962)

First expression, then comprehension is measure in a picture vocabulary test. Secondly, expression, then comprehension of nine word classes is tested (singular-plural nouns, personal pronouns, possessives, adjectives, demonstratives, articles, adverbs, prepositions, verb-auxiliaries) using pictures depicting the various possibilities in question. The child either supplies the correct word, phrase, or sentence to the specified picture (expression) or he points to the correct picture in response to the examiner's question (comprehension).

Peabody Picture Vocabulary Test (Dunn, 1965)

"The PPVT is designed to provide an estimate of a subject's verbal intelligence through measuring his hearing vocabulary." p. 25

"Furthermore, in light of the growing body of literature on the many facets of intellect, one must concede that the PPVT is not providing a comprehensive measure of intellectual functioning. Instead, by means of a short, restricted sample of behavior, it attempts to provide a useful prediction of school success, especially in the areas which call more heavily on verbal intelligence." p. 33

taken from: Dunn, L., "Expanded Manual-Peabody Picture Vocabulary Test", Minneapolis: American Guidance Service, Inc., 1965.

Age Norms: 2-6yrs - 18yrs.
Standardization Sample - 4012 white children in and around Nashville, Tenn. however, subjects were chosen to approximate the normal IQ distribution measured by other intelligence tests.

WISC-R (1974)

Similarities Subtest
This is a measure of expressive vocabulary.
Ex.: "How are a wheel and a ball alike?
The child must distinguish the similar properties of the test items and express this knowledge verbally.

Vocabulary Substest
Again, this is a measure of the child's knowledge of word meanings and his ability to express this verbally.
The child is asked for a definition of each word tested.

Age Norms 6-16 yrs.
Standardization Sample - 200 children (half male, half female) at each of 11 age levels. Total: 2200.
Racial distribution matched to 1970 census for the age range tested. Geographic region."
"Occupation of head of household" was matched to 1970 census for percentage of children in each age group living in families where head of household was employed in each occupation category.

Wechsler, D. "Manual for the Wechsler Intelligence Scale for Children-Revised", New York: The Psychological Corporation, 1974.

Stanford-Binet, Form L-M (1960)

Vocabulary Subtest

This is a measure of expressive vocabulary. At the younger age levels, the child is asked to identify pictures. Later on (year VI), a definition is requested from the child.

Age Norms - 2-18 yrs.
Standardization sample - n=4498 but was not evenly distributed at each level
not meant to be a representative sample
children referred for testing were excluded
2 stratified samples on basis of father's occupation was also taken
100 6 yr. olds 100 15 yr. olds-

ITPA

Auditory Reception Subtest

This is a test to assess the ability of a child to derive meaning from verbally presented material. Since the receptive rather than the expressive process is being sampled, the response throughout is kept at the level of a "yes" or "no", or even a nod or shake of the head...the automatic function of determining meaning from syntax has been minimized by retaining only one sentence form."

Ex.: "Do dogs eat? Do bananas telephone?" p. 9-10.

Visual Reception Subtest

"It is a measure of the child's ability to gain meaning from visual symbols...The credited choice (among the response pictures) is the object or situation which is conceptually similar to the stimulus." p. 10.

Taken from: Kirk, McCarthy & Kirk. "Examiner's Manual, IPTA, Revised Ed. "U. of Illinois Press, 1968.

Age Norms 2-0 yrs. - 10-10 yrs.

Grammatic Closure Subtest

"In the Grammatic Closure Test an attempt has been made to test the degree to which a child has acquired automatic habits for handling syntax and grammatical inflections."

Taken from: Kirk, S. & Kirk, W., "Psycholinguistic learning disabilities: diagnosis & remediation", University of Illinois Press, 1971, p. 12

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Foster, C. R., Giddan, J. J., & Stark, Joel ACLA: Assessment of Children's Language Comprehension. (Research Edition) Consulting Psychologists Press, Inc., 577 College Ave., Palo Alto, Calif., 1969.

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Kirk, S. A., McCarthy, J. J., and Kirk, W. D. The Illinois test of psycholinguistic abilities (revised). Urbana: University of Illinois Press, 1968.

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Lerea, L. Assessing language development. J. Speech Hear. Res., 1958, 1, 1, 75-85.

Longhurst, T. M., & Scrandt, T. A. M. Linguistic analysis of children's speech: A comparison of four procedures. Journal of Speech and Hearing Disorders, 1973, 38, 240-249.

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Mecham, M. J., and Jex, J. L. Picture speech discrimination test. Provo, Utah: Brigham Young University Press, 1962.

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Instruments designed specifically to assess the language development of Spanish or Chinese-speaking children (to pick two large U.S. groups) do not, insofar as we have been able to determine, exist as such. "Translations" into Spanish have been made of some of the standarized tests, for example the Carrow, and the Peabody Picture Vocabulary Test but, in addition to suffering from the defects of the original instruments, they fail to take cultural and dialect differences into account. In short, then, while the situation for language assessment of the English-speaking child is not ideal, one can put together a number of existing instruments and, with some effort get a pretty good picture of the level of language development of the child; for the non-English-speaking child, much less is available.[2]

Finally, we must ask what is available to assess the language abilities of the child learning English as a second language. Here again, we find very little. The existing standarized TEFL achievement tests are oriented primarily towards adults and stress non-verbal language achievement. A recent entry into the field is the Bilingual Syntax Measure (BSM). (Burt, Dulay and Hernandez, Harcourt Brace Jovanovich, Inc.) The BSM was designed to determine the level of structural language development of the child and was prepared for children of any language background in pre-school through the third grade who have been exposed to English either at home or school. At present, the BSM has both a vocabulary comprehension section and a syntax production section, the former not being scored but used only to determine the level of "working" vocabulary. Indeed, the BSM has a variety of drawbacks, most of which has been addressed in the second language acquisition literature (Cf. Rosansky, 1975, Traone, 1974 cited in Appendix B). It appears, however, to indicate a reasonable way to begin development of efficient, valid, and

and reliable instruments for assessing second language acquisition in children.

D. What do we know about the way in which a language-impaired child acquires a second language?

Again, and for the last time: very little. Reference to the bibliography on second language acquisition, Appendix B, will show that fewer than 10 of all the citations deal with the acquisition of English by Spanish-speaking children, two with Chinese-speaking children, and the others deal with adults, theory, motivations, speculations, and the like.

One example will perhaps clarify our current level of understanding. Brown (1973) and deVilliers and deVilliers (1973) argue that English-speaking children acquire the following 14 grammatical morphemes in the order indicated.

Aequisition Order of 14 English Grammatical Morphemes

1. present progressive
2/3. prepositions in and on
4. regular plural
5. irregular past
6. possessive
7. uncontractible copula
8. articles
9. regular past
10. regular third person singular
11. irregular third person singular
12. uncontractible auxiliary
13. contractible copula
14. contractible auxiliary

These morphemes are frequent, easy to detect, and relatively straightfoward to test as a part of a child's language abilities. But we do not even know if the Spanish-speaking child, for example, acquires these in learning English as the above, in another, or any particular order. Indeed, Dulay and Burt (1973, 1974) have used the BSM as a research tool to

attempt to determine the order, if any, of the Spanish-speaking and Chinese-speaking child, but their results are inconclusive and under strong and serious attack form within the field of second language acquisition. (Cf. Rosansky, 1975; Hakuta, 1975). Thus, we do not even know if there is any order of grammatical morphemes when learning English as a second language.

Suffice it is to say that we are aware of nothing at present on the language acquisition of language-impaired children acquiring English as a second language.

Proposed Research

It should be clear from the discussion of the questions raised above that there is no lack of research possibilities which are directly relevant to the language-impaired child and bilingual education. What one usually attempts in a paper such is this is to propose research which builds on the existing state-of-the-art. I think it should be clear here that what is really necessary is to perform the basic research to create a state-of-the art.

We cannot seriously hope to develop intelligent and adequate educational policy to deal with the language-impaired child until we indeed understand the pattern of language development. This assumes, of course, that these children do acquire language in a systematic way, analogous to the pattern of acquisition found in the normal child. This, itself, needs to be termined. I believe that we must have both longitudinal as well as cross-sectional studies of language-impaired children, since each provides us with different types of information, and since we are starting with such a very limited knowledge. I must add here, that such language studies might very well involve the investigation of the concomitant cognitive development of these children. It is my recommendation that one of the most important areas to investigate initially with these children is the extent to which their linguistic ability (what we might call their knowledge of the grammatical rules of the language) and their communicative ability (their ability to use the language effectively to communicate) appear to be developing in a way analogous to how these two abilities develop in normal children. At least some preliminary evidence indicate that these two abilities may be considerably out of phase.

At the moment, I would not recommend that research and development in the area of assessment instruments be pursued until the work at UCLA on the CLAM project is carefully examined. It is now too early to tell how successful this project will be, but since the level of effort is high

it might be most effective to further assist this group than initiate new, additional efforts.

Finally, I would recommend that the best place to place research effort at the present time lies in the area of examining the process and pattern of second language acquisition by both children and adults. We indeed know enough about first language acquisition to permit us to define and carry out careful research on how second language acquisition compares. We know very little about the process at the present, very little about the general pattern of how Spanish-speaking school child, for example, learns English, the extent to which the first language interferes with the learning, whether or not daily classes really provide the most effective means to facilitate the English-learning, or even if such children attack the task of second language learning in the same way and, if not, what different strategies are utilized. Only when we know much more about the process of second language learning will be in a position to most effectively formulate bilingual education policy.

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Research in the Acquisition of Pragmatic Competence in Second and First Language Acquisition

Second Language Research

Teachers have long recognized that a primary objective of the language learner (and perhaps the primary objective of the "good" language learner) is the acquisition of "communicative competence" (Hymes, 1972), and not simply the acquisition of "grammatical" or "linguistic competence" (Cf., Rivers, 1973; Paulston, 1974). Nevertheless, from the early studies of Lambert (1962) to the most recent "transformationalist" studies of second language acquisition (Cf., for example, Schuman, 1975) we are unaware of a single study which has systematically investigated the way(s) in which a learner integrates language use and language form. The obvious reason for this oversight has been the non-existence of a systematic description of the pragmatic rules of language. When teachers such as Rivers or Paulston talked about "communicative competence", they spoke of specific, non-generalizable functions of language such as "hiding one's feelings", or "Talking one's self out of trouble", or "Greeting", and it is clear that such functions are too specific to form a basis for the systematic investigation of the interface between language use and language form.

The theory of "Speech Acts" which has evolved from Austin's (1952) original concepts and expanded on by Grice (1967), Searle (1967), Fraser (1973, 1974), R. Lakoff (1973), does make possible a more unified analysis of grammatical and communicative competence, but to our knowledge, this theoretical perspective has not yet been taken anywhere in the second language acquisition research literature. Indeed, speech act analysis has only very recently begun to be applied to the study of first language acquisition.

First Language Research

There has been some recent research examining request made by young children in the process of acquiring their first language. We feel the important questions to be asked are: How is the illocutionary force of request varied? What is the order of acquisition both receptive and productive of the various strategies used to request? When do children evidence the ability to vary the level of politeness according to social context? What is the evidence that when children make requests they have acquired knowledge about the pragmatic rules of language?

To what extent do the studies available attempt to answer the above questions? Schatz (1974) studies the receptive ability of a small number of two-year-olds to comprehend their mother's requests. She found that the children appropriately responded to requests about 50% of the time, and the probability of responding to a directive in the question form was the same as that of responding to an imperative. Of the question forms uttered, 40% did not contain the imperative embedded. So, as early as age two, it is seen that children sometimes accurately comprehend requests of at least three types: imperative, (i.e. Pick up the block), embedded imperative (Can you pick up the block?), and general question (Are there any more blocks?). Because two-year-olds are not expected to have the cognitive capacity to simultaneously interpret the literal meaning of a sentence, relate it to context and to the perspective of the speaker, Schatz suggests that the two-year-old has a simple action-oriented discourse rule in which he finds some element in his mother's speech, either action or object, which can be acted our or acted upon. Motivated to maintain social contact with mother, the child performs some action to indicate that he is responsively taking his turn in the interaction.

will a similar strategy be employed by adult second language learners, motivated to socially interact and communicate with the speaker of the target language? Schatz's suggestion, and its extension to the second language learner, is supported by Miller (1970) who proposes that the communicative function of speech supplies the principal motivating force for language acquisition and also may provide an abstract structure from which the elaboration of the linguistic code may proceed.

The Schatz study attempts to show that young children respond to directives of varying illocutionary force. Garvey (in press) in her work with 56 children between the ages of 3½ and 5½, states that these children produced requests which ranged in illocutionary force from imperative to embedded imperative to implied requests such as need statements (i.e. I'm hungry). The directives uttered were said to be communicative in that 53% of the time the child's peer-partner complied, and 77% of the time the speaker received a response showing the directive had been understood.

Garvey states that the younger children used more direct requests, implying that order of acquisition in the productive modality proceeds from directness to sublety. Ervin-Tripp (in press), without specifically referencing supportive data, predicts that production begins with need statements, identification of goal objects or location, and proceeds to imperatives, embedded imperatives, and then permission requests. However, Mueller (1972) has shown that need statements are likely to predict a high degree of failure of the peer-partner to respond to the request. The production of need statements as requests early are probably due to the likelihood of the parent's response, but children themselves show a low probability of response to them.

Variation of register from a lower to a higher degree of politeness has been studied by Sachs and Devin (1973). Data from four year old children

speaking to younger children, adults, and dolls was analyzed for question directives and polite imperatives. They found the polite forms to be absent from speech to babies and baby dolls, present in utterances to peers and adults. However, there was no detailed analysis of the frequency of particular forms at specific levels of politeness.

Azer, Fraser, and Loritz are currently conducting research at Boston University concerning the receptive and productive acquisition of appropriate linguistic forms used to request.

Ervin-Tripp (in press) reports the case of one two-year-old child who apparently used different request strategies appropriate to the age and rank of addresses. At home she is said to have used more politeness modifiers when addressing father than mother, and at school used no commands, but only questions, and permission requests to four-year-olds and did use commands to 2 and 3-year-olds, but 80% of those directed to 3-year-olds contained a post-posed "please" or "Okay." This is suggestive of the early age at which change in register may be evidenced. However, more detailed research on larger numbers of subjects is required to have adequate data to support such a theory.

Data from the 36 dyads of nursery school children led Garvey (in press) to conclude that the subjects had acquired pragmatic rules of English. Specifically, she related their utterances to a set of conditions on the speaker and hearer, termed interpersonal meaning factors, which she claimed were underlying the request. The factors she outlines are the following: that the request and response are reasonable, the speaker (S) wants the hearer (H) to perform some act (A), that H is able, willing, and obligated to do A, that he is an appropriate recipient of the request, but may have rights which conflict with the performance of A, and that before the request H did not intend to do A (Garvey, in press, p. 24). The evidence that these

factors are operative in the children's performance are supported by such examples from the data as the utterance, "Father, can you take the baby?" were "can you" is claimed to be querying the addressee's ability to perform the requested action. The evidence is insufficient to read such a conclusion. The children may indeed be using conventional routines for requesting, themselves based on such meaning factors, but it remains unclear if their utterances reflect knowledge of the meaning factors or not.

These initial investigations of the role of pragmatic in first language acquisition suggest some theories to consider in reasearch with second language learners, but more conclusive data to strongly support the suggested theories remains lacking.

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FOOTNOTES

1. Profile 1 and some of the associated discussion of the aphasic child has been drawn from the Final Report (BEH Contract No. OEC-0-74-9186 to Boston University, P. Mayab and Bitraser, Principal Investigators).

2. George Blanco brought to my attention during the presentation of this paper an additional set of instruments summarized by the Division of Bilingual Education, Texas Education Agency. I have not had the opportunity to carefully examine these to determine if my comments apply though a preliminary reading suggests they do.